743.200-1/990

TM 743-200-1

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

STORAGE AND MATERIALS HANDLING

This copy is a reprint which includes current pages from Changes 2 through 24.

HEADQUARTERS, DEPARTMENT OF THE ARMY

JANUARY 1958

D 101.11:

READEX FICHE best copy available

CHANGE }
NO. 24 }

STORAGE AND M

Interim changes are not official unless they are aut
terim changes on their expiration dates unless soon

TM 743-200-1, 15 January 1958, is changed as foll

1. New or changed material is indicated by a ve

2. Remove old pages and insert new pages as i

Remove pages
11-1 . . . .
33-1 through 33-17 . . . .
33-A-1 through 33-A-8 . . . .
52-1 and 52-2 . . . .
56-3 through 56-11 . . . .
57-1 through 57-7 . . . .
312-1 through 312-8 . . . .
312-A-1. . . . .
312-B-1. . . . .
312-C-1. . . . .
312-D-1. . . . .
312-E-1. . . . .
312-F-1. . . . .

3. File this change sheet in front of the publication

TM 743-200-1

C 24

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, *1 July 1982*

ATERIALS HANDLING

**henticated by The Adjutant General. Users will destroy in-
er superseded or rescinded.**

ows:

rtical bar in the margin of the page.

ndicated below.

Insert pages
11-1
33-1 through 33-26
52-1 and 52-2
56-3 through 56-10
57-1 through 57-6
312-1 through 312-5
312-A-1 and 312-A-3
312-B-1
312-C-1

for reference purposes.

By Order of the Secretary of the Army:

E. C. MEYER
General, United States Army
Chief of Staff

Official:
ROBERT M. JOYCE
Brigadier General, United States Army
The Adjutant General

Distribution:

Active Army

- ACSC-E (2)
- ACSI (2)
- ARRADCOM (2)
- Armies (5)
- Army Dep (10)
- Army Hosp (2)
- Arsenals (3)
- AVRADCOM (5)
- CERCOM (5)
- CINFO (2)
- COA (2)
- Cof Engrs (2)
- Cof SptS (3)
- CORC (2)
- CMH (2)
- CNBG (2)
- DARCOM (60)
- DARCOMLSSA (5)
- DARCOMPSCC (50)
- DCSLOG (2)
- DCSOPS (2)
- DCSPER (2)
- FORSCOM (5)
- Gen Hosp (2)
- Instl (CONUS) (2)
- LOG CENTER (5)
- LOGCOMD (5)
- MAAG (1)
- MDW (1)
- MERADCOM (5)
- MICOM (5)
- MTMC (1)
- OCC-E (2)
- OSD (2)
- OS Maj Cmd (10)
- PG (2)
- PMS Jr. Div Units (1)
- PMS Mil Sch Div Units (2)
- TACOM (5)
- TECOM (5)
- TRADOC (5)
- TIG (5)
- TJAG (1)
- TPMG (2)
- TSG (5)
- USACDC (2)
- USACOMZEUR (170)
- USALMC (10)
- USASAFLOGCOM (5)
- USACONARC (5)
- USMA (1)
- USARJ (25)

NG: State AG (3)

USAR: None

For explanation of abbreviations used, see AR 310-50.

TM 743-200-1
C 23

CHANGE
No. 23

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, *2 March 1979*

STORAGE AND MATERIALS HANDLING

TM 743-200-1, 15 January 1958, is changed as follows:

1. Remove old pages and insert new pages as indicated below.

Remove pages	*Insert pages*
i-ii	i-ii
11-1	11-1
25-1 through 25-4	25-1 through 25-A-1
31-1 through 31-12	31-1 through 31-12
32-1 through 32-13	32-1 through 32-13
33-1 through 33-17	33-1 through 33-17
33A-1 through 33A-8	33A-1 through 33-A-8
34-1 through 34-6 (deleted)	(None)
35-1 and 35-2	35-1 and 35-2
37-1 through 37-6	37-1 through 37-A-1
38-1 through 38-18	(superseded by AR 740-3)
56-9 and 56-10	56-9 and 56-11
312-1 through 312-3	312-1 through 312-F-1
	315-1 through 315-A-1

2. File this change in front of the publication for reference purposes.

By Order of the Secretary of the Army:

BERNARD W. ROGERS
General, United States Army
Chief of Staff

Official:
J. C. PENNINGTON
Major General, United States Army
The Adjutant General

Distribution:

Active Army

- ACSI (2)
- ARRADCOM (2)
- ARMIES (5)
- Army Dep (10)
- Army Hosp (2)
- Arsenals (3)
- COA (2)
- Cof Engrs (2)
- Cof Spts (3)
- CORC (2)
- CMH (2)
- CNBG (2)
- DCSLOG (2)
- DCSOPS (2)
- DCSPER (2)
- Gen Hosp (2)
- Instl (CONUS) (2)
- LOGCOMD (5)
- MAAG (1)
- MDW (1)
- MTMC (1)
- OCC-E (2)
- OSD (2)
- OS Maj Comd (10)
- PG (2)
- PMS Jr Div Units (1)
- PMS Mil Sch Div Units (2)
- PMS Sr Div Units (1)
- TIG (5)
- TJAG (1)
- TSG (5)
- USAAVRADCOM (5)
- USACDC (2)
- USACOMZEUR (170)
- USACERCOM (5)
- USALMC (10)
- USDARCOM (60)
- USDARCOMLSSA (5)
- USDARCOMPSCC (50)
- USAMERADCOM (5)
- USAMIRCOM (5)
- USASAFLOGCOM (5)
- USATARCOM (5)
- USATECOM (5)
- USMA (1)
- FORSCOM (5)
- TRADOC (5)
- LOG Center (5)

NG: State AG (3)

USAR: None

For explanation of abbreviations used, see AR 310-50

CHANGE No. 22

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, 4 *May 1978*

STORAGE AND MATERIALS HANDLING

TM 743-200-1, 15 January 1958, is changed as follows:

1. Remove old pages and insert new pages as indicated below.

Remove pages	*Insert pages*
514-1 through 514-10	514-1 through 514-5

2. File this change sheet in front of the publication for reference purposes.

By Order of the Secretary of the Army:

BERNARD W. ROGERS
General, United States Army
Chief of Staff

Official:

J. C. PENNINGTON
Brigadier General, United States Army
The Adjutant General

Distribution:

To be distributed in accordance with DA Form 12-34, requirements for Storage of Supplies and Equipment.

TECHNICAL MANUAL
No. 743-200-1

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, *15 January 1958*

STORAGE AND MATERIALS HANDLING

Page
FOREWORD iii
CHAPTER 1. GENERAL
SECTION I. Scope, application and use 11-1
II. Glossary of terms—see TM 743-200
CHAPTER 2. STORAGE SPACE
SECTION I. Types of facilities—see TM 743-200
II. Planning the storage layout—see TM 743-200
III. Space requirement factors—see TM 743-200
IV. Design of stock location system—see TM 743-200
V. Effective utilization 25-1
VI. Space control and reporting 26-1
CHAPTER 3. STORAGE PROCEDURES
SECTION I. Receiving 31-1
II. Shipping 32-1
III. Stock location 33-1
IV. Pest control—see TM 743-200
V. Stock discrepancies 35-1
VI. Stock number changes—see TM 743-200
VII. Inventory—see TM 743-200
VIII. Reserved
IX. Loose issue replenishment 39-1
X. Operations in controlled humidity space 310-1
XI. Basic issue list items and set assembly—to be printed
XII. Small arms security and storage controls 312-1
XIII. Extreme cold weather storage considerations 313-1
XIV. Packaging general supplies 314-1
XV. Security of materials in storage 315-1
XVI. Handling of retrograde material 316-1
CHAPTER 4. MATERIALS HANDLING EQUIPMENT AND PRINCIPLES
SECTION I. Basic principles—see TM 743-200
II. Illustrated nomenclature—see TM 743-200
III. Selection of materials handling equipment—see TM 743-200
IV. Materials handling equipment requirement factors—see TM 743-200
V. Loading and unloading—see TM 743-200
VI. Unit loads 46-1
VII. Equipment and labor 47-1
VIII. Container and dunnage fabrication 48-1
CHAPTER 5. STORAGE OF SPECIAL COMMODITIES
SECTION I. Lumber—see TM 743-200
II. Ammunition (Class V Material) 52-1
III. Vehicles (tracked, wheeled, and artillery)—see TM 743-200
IV. Hazardous commodities 54-1
V. Subsistence—see TM 743-200
VI. Miscellaneous commodities 56-1
VII. Packaged petroleum products 57-1
VIII. Metal products—see TM 743-200
IX. Cable storage and handling—see TM 743-200
X. Nondepartment of defense owned stocks 510-1
IX. Army aircraft and components 511-1

Page

CHAPTER 5.
SECTION XII. Marine items 512-1
XIII. Railway equipment and components 513-1
XIV. Depot storage of Army air delivery equipment 514-1
XV. Handling long narrow items 515-1

CHAPTER 6. SAFETY—see TM 743-200

7. STORAGE MANAGEMENT TECHNIQUES—see TM 743-200

8. ON-THE-JOB TRAINING
SECTION I. On-the-job training course for operators of materials handling equipment—see TM 743-200
II. On-the-job training course for storage personnel—see TM 743-200
TOPICAL INDEX .... Index 1

FOREWORD

This manual has been developed for use primarily by operating personnel engaged in the storing and handling of military supplies.

Sound, basic principles of good warehousing are enunciated herein. Those principles are translated into standard methods, procedures, and techniques which have proved by long experience to be the most efficient and effective in the storage and handling of military supplies. Strict and uniform compliance with the methods and standards prescribed by this manual are essential.

As new or revised methods, procedures, and techniques are developed the present text will be changed accordingly. Suggestions for improving the value of this manual are welcomed.

CHAPTER 1

GENERAL

Section I. SCOPE, APPLICATION, AND USE

	Paragraph	Page
Purpose and Scope	1.1.1	11-1
Policy	1.1.2	11-1
Implementation	1.1.3	11-1
Organization and Use	1.1.4	11-1

1.1.1. Purpose and Scope

This manual implements DOD 4145.19-R-1. Storage and Materials Handling, and provides in greater detail, policies; procedures, and methods necessary to ensure maximum uniformity in Department of the Army storage and materials handling operations.

1.1.2. Policy

Storage and materials handling policies, procedures, and methods contained in DOD 4145.19-R-1 and as implemented herein are mandatory for all Department of the Army activities in CONUS and overseas. Requests for deviation or waivers will be considered when it can be demonstrated that the system in question cannot provide a workable method or procedure. Deviations or waivers should not be requested solely to accommodate existing internal procedures or organizational environment.

Recommendations and/or requests for deviations should be forwarded through channels as follows:

1.1.2.1. CONUS supply installations and activities to Commander, US Army Materiel Development and Readiness Command, ATTN: DRCMM-ST, 5001 Eisenhower Avenue, Alexandria, VA 22333.

1.1.2.2. CONUS installations and oversea supply installations to Deputy Chief of Staff for Logistics, Department of the Army, ATTN: DALO-SMS-R, Washington, D.C. 20310.

1.1.2.3. Effective with the publication of DOD 4145.19-R-1, dated September 1979, all references to TM 743-200 in this manual will be changed to DOD 4145.19-R-1.

1.1.3. Implementation

The extent of procedural data in this manual is only that deemed necessary to define storage and materials handling policy. Command and local implementation is necessary. Depot storage and materials handling elements will prepare and maintain current detailed procedures covering their operations.

1.1.4. Organization and Use

This manual is decimally organized and paragraphed with chapters, sections, paragraphs, and subparagraphs separated by a decimal. The first number represents the chapter, the second the section, the third and subsequent numbers the paragraphs and subparagraphs.

1.1.4.1. The pages of the publication are numbered in a separate series for the index, bibliography, and each section. The pages of a section are numbered in sequence with Arabic numerals from 1. Each page number is preceded by a two-digit number; the first digit represents the chapter, and the second digit represents the section. For example, the fifth page of Chapter 3, Section I, is numbered 31-5.

1.1.4.2. The index pages are numbered consecutively, using lower case Roman numerals (for example, i, ii, iii).

CHAPTER 2

STORAGE SPACE

Section V. EFFECTIVE UTILIZATION

	Paragraph	Page
Storage practices	2.5.1.	25-1
Retail storage	2.5.2.	25-1
Bulk storage	2.5.3.	25-1
Small and medium (bulk) lot storage	2.5.4.	25-1
Working areas	2.5.5.	25-1
Standardization of layout	2.5.6.	25-1
Aisles	2.5.7.	25-1
Aids to storage operations	2.5.8.	25-2
Space utilization	2.5.9.	25-2
Protection of stock	2.5.10.	25-2
Marking of materials for storage	2.5.11.	25-2
Housekeeping	2.5.12.	25-2
Dehumidified storage	2.5.13.	25-2
Open storage	2.5.14.	25-2
Cable rereeling	2.5.15.	25-2
Records and files in the warehouse	2.5.16.	25-2
Evaluation of storage and materials handling operations	2.5.17.	25-2
Types of storage space	2.5.18.	25-2
Allocation	2.5.19.	25-2
Assignment	2.5.20.	25-2
Conversion	2.5.21.	25-3
Cross servicing	2.5.22.	25-3
Inactivation	2.5.23.	25-3

2.5.1. Storage Practices

2.5.1.1. Policy

2.5.1.1.1. General. Space will be utilized to the maximum extent consistent with accepted principles of economy, safety, sound storage practices and operational requirements. All supplies, including unserviceable economically repairable, will be placed in covered storage except those specifically indicated in SB 740-1 for open storage.

2.5.1.1.2. Storage of small arms. See chapter 3, section XII for special policy, procedures and controls pertaining to small arms.

2.5.1.1.3. Ammunition storage. See chapter 5, section II for ammunition storage policy.

2.5.1.2. Responsibilities. Installation commanders and storage managers will be responsible for attaining the utilization objectives indicated herein and for compliance with other Army directives pertinent to utilization of space at Army storage activities.

2.5.2. Retail Storage

(See TM 743-200.)

2.5.3. Bulk Storage

(See TM 743-200.)

2.5.4. Small and Medium (Bulk) Lot Storage

(See TM 743-200.)

2.5.5. Working Areas

(See TM 743-200.)

2.5.6. Standardization of Layout

(See TM 743-200.)

2.5.7. Aisles

2.5.7.1. See TM 743-200.

2.5.7.2. Narrow aisle operating equipment will be used to the maximum extent practicable to effect reduction in or minimizing of aisle widths.

2.5.7.3. As a means of contributing to storage regularity and also to provide a desirable safety factor, warehouse aisle boundaries will be clearly identified by painted stripes. The width of these strips will not exceed 4 inches nor be reduced below 3 inches, and will be consistent throughout an installation's warehouses. White gloss No. 17875, as identified in Federal Standard TT-C-595, and as required by AR 385-30 will be used for this purpose. Paint will conform to Federal Specification TT-P-115, Paint, Traffic, Highway.

2.5.8. Aids to Storage Operations

(See TM 743-200.)

2.5.9. Space Utilization

(See TM 743-200.)

2.5.9.1. Space will be considered efficiently utilized only when occupancy embraces effective use of vertical as well as horizontal space. An occupancy factor of 85 percent of net storage space available is considered good utilization. When occupancy of a given structure or group of structures in the same general storage area consistently falls below utilization acceptability standards, appropriate remedial action, such as consolidation of stocks or placement of space in stand-by status will be taken. (Reference AR 740-1 and AR 210-17.)

2.5.9.2. Storage heights will be in accordance with the maximum consistent with safety (reference TM 743-200), compatibility of supplies, and capability of materials handling equipment. Supplies will be stored where stacking height capability of supplies is commensurate with the height of space being utilized and floor load capabilities.

2.5.9.3. Rewarehousing to increase, the efficiency of space utilization will be accomplished within the limits of available resources, when all considered factors indicate savings potential.

2.5.10. Protection of Stock

(See TM 743-200.)

2.5.11. Marking of Materials for Storage

(See TM 743-200.)

2.5.12. Housekeeping

(See TM 743-200.)

2.5.13. Dehumified Storage

(See TM 743-200 and paragraphs 3.10.1 through 3.10.7.)

2.5.14. Open Storage

(See TM 743-200.)

2.5.15. Cable Rereeling

(See TM 743-200.)

2.5.16. Records and Files in the Warehouse

(See TM 743-200.)

2.5.17. Evaluation of Storage and Materials Handling Operations

(See TM 743-200.)

2.5.18. Types of Storage Space

(See TM 743-200 and AR 740-1.)

Additional types of storage space pertinent to Army storage installations are:

2.5.18.1. Heated Space. An area in which the temperature can be controlled within specified limits by the application of heat, whether the heating equipment is in operation or not. Space equipped with heating equipment that has been also equipped with dynamic dehumidification equipment will be considered as controlled humidity space.

2.5.18.2 Unheated Space. An area not equiped with heating facilities nor dynamic dehumidifiers.

2.5.18.3. Other Nonwarehouse Space. Space assigned for storage operations within any structure designed for other than storage purposes; i.e., barracks, dry tanks, hangars transitory shelters, and quonset buildings.

2.5.18.4. Concrete. An open area covered with a concrete surface.

2.5.18.5. Blacktop. An open area covered with a tar or asphalt surface.

2.5.18.6. Crushed Stone. An open area covered with a crushed stone surface.

2.5.18.7. Gravel. An open area covered with gravel.

2.5.19. Allocation

Allocations of storage space will be made in accordance with AR 740-1. Requests for space received at CONUS storage installations from current or potential space users in excess of current allocation will be referred to the appropriate higher headquarters. In cases where incoming property will exceed allocated space allotments, the appropriate command will be notified immediately.

2.5.20. Assignment

Assignment of space is the responsibility of the installation commander. Records will be maintained at the installation for each building, by section or further subdivision as applicable, to indicate space use. These records will indicate the type of space (heated, unheated, or CH), use, and tenant. Shops located in storage buildings and storage support areas (including offices) will be listed separately.

2.5.21. Conversion

2.5.21.1. Storage space may be converted to nonstorage purposes only when other suitable space for the intended purpose is not available at the installation. Such conversion will not be accomplished without prior approval from higher headquarters (see AR 740-1). Such approval is not required in cases where provisions of AR 405-80 and AR 405-90 apply.

2.5.21.2. Requests for conversion of storage (see appendix) will include the requirements of AR 740-1 and the following:

2.5.21.2.1. Amount of space recommended for conversion.

2.5.21.2.2. Type of space; i.e., open, shed, warehouse; etc., and the building number or area number involved.

2.5.21.2.3. Planned use, in detail, of the space recommended for conversion, the suitability of the space for the purpose intended, and justification for the requirements.

2.5.21.2.4. Foreseeable storage requirement for space recommended for conversion.

2.5.21.2.5. Statement regarding nonavailability of other space suitable for this purpose.

2.5.21.2.6. Modification requirement, if any, and estimated cost.

2.5.21.2.7. Amount and cost of rewarehousing that will be required if conversion is approved. If rewarehousing is necessary, and other space is available, a statement should be included as to why such space is not suitable for the nonstorage requirement.

2.5.21.2.8. Effect on the master plan.

2.5.22. Cross Servicing

See AR 740-1 for authority and procedure for assignment of space to other agencies on cross servicing agreement.

2.5.23. Inactivation

2.5.23.1. Whenever complete storage structures are vacant and are excess to programmed requirements (AR 740-1), they will be considered for inactivation in the following priorities:

2.5.23.1.1. Transitory shelters.

2.5.23.1.2. Sheds.

2.5.23.1.3. Warehouses, temporary or permanent, which are determined to be least desirable in consideration of location, maintenance costs, and operational inefficiencies.

CHAPTER 2

STORAGE SPACE

Section VI. SPACE CONTROL AND REPORTING

	Paragraph	Page
General	2.6.1	26-1
Space control techniques	2.6.2	26-1
Space reporting illustrated	2.6.3	26-1
Space audit and report procedure	2.6.4	26-1

2.6.1. General

The allocation and assignment of space in CONUS and oversea storage installations will be in accordance with AR 740-1. Installation commanders will utilize the latest approved space management methods to effect the most economical control and reporting of storage space.

2.6.2. Space Control Techniques

2.6.2.1. Space Allocation Map. Storage managers will maintain a map of the installation clearly reflecting the current status of the total area allocated for storage operations and the location of other related installation activities. It will indicate the type of space, specific use (receiving, supply room, office; etc.), tenant, and broad materiel groupings; i.e., repair parts, end items; etc. Identification of each of these areas may be accomplished by the use of color coding. An overlay may be used to facilitate the updating of the map.

2.6.2.2 Planographs.

2.6.2.2.1. Planographs will be located in the space control activity and in a single focal point of activity in each warehouse, shed, or storage area. (See TM 743-200.) (For ammunition, see paragraphs 5.2.1 through 5.2.6.)

2.6.2.2.2. Planographs will reflect direction of storage, aisles, bin and rack areas, structural space, support areas, offices, washrooms, total gross square feet, and the net square feet of available space. The total gross and net square feet available will be shown for each major area of storage (section).

2.6.2.2.3. Planographs in storage areas will be scaled to $^1/_{16}$ inch per foot.

2.6.2.2.4. It is not required that current occupied or vacant space be indicated on each individual planograph with the storage areas.

2.6.3. Space Reporting, Illustrated

(See TM 743-200)

2.6.4. Space Audit and Report Procedure

2.6.4.1. Survey of Storage Space.

2.6.4.1.1. Storage space survey work sheets will be developed for each reporting area within the storage installation. The sample work sheet (fig. 1) will be modified as required to meet local dimensional requirements. Local reproduction of the work sheet, based upon the various section sizes required, is authorized.

2.6.4.1.2. Storage space surveys will be accomplished periodically utilizing the Storage Space Survey Work Sheet. The minimal information to be shown is indicated on the work sheet (fig. 1). Reporting periods will be based on local need, but in no instance will such periods be less than once per quarter.

2.6.4.1.3. The space control activity will use the space survey work sheet for updating space control information, space assignment, and for compiling reports to higher authority.

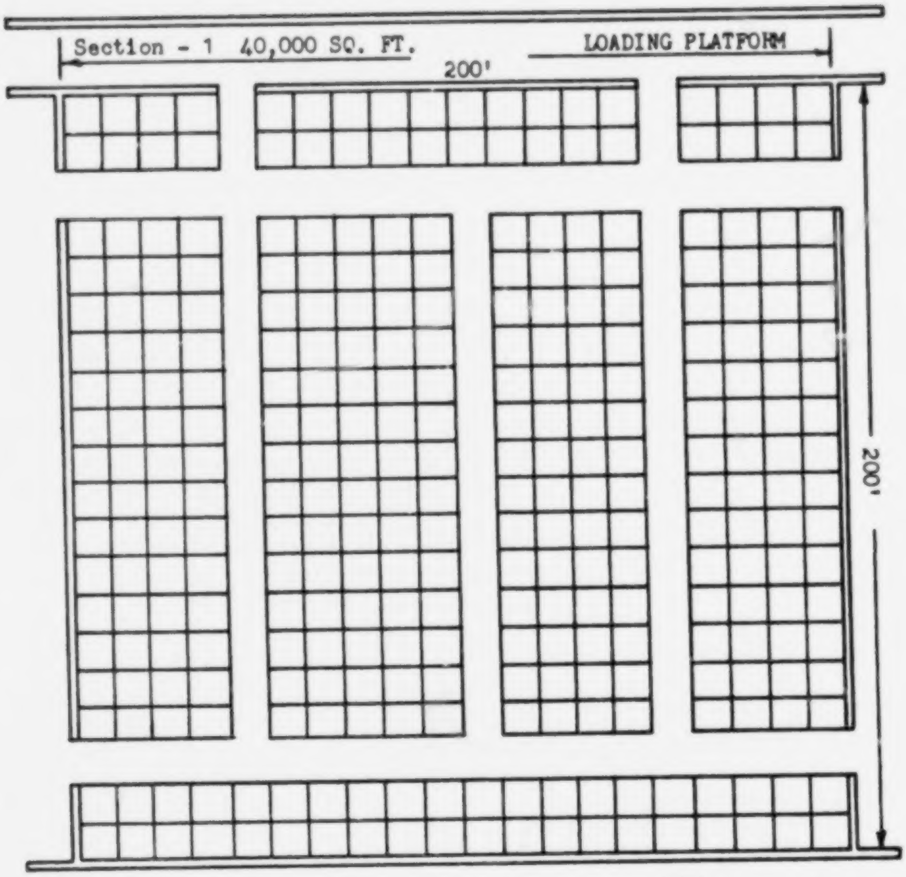
2.6.4.1.4. When the work sheet shows that type A potential vacant space (see TM 743-200) reaches 5 percent of the net occupied storage space, an examination of the area affected will be made and consideration, where necessary, taken to recover such space.

2.6.4.2. Storage Space Utilization and Occupancy Reports.

2.6.4.2.1. The Storage Space Utilization and Occupancy Report (DD Form 805) will be prepared and forwarded in accordance with instructions in AR 740-1 by all activities other than the Army Materiel Command.

2.6.4.2.2. Reporting activities under the Army Materiel Command will report storage space utilization and occupancy in accordance with mechanical report implementations of AR 740-1 provided by Headquarters, Army Materiel Command.

SAMPLE


Section - 1 40,000 SQ. FT.
LOADING PLATFORM
200'
200'

Scale 1" = 40' □ = 10' square

Bldg or Area ________
Section ________
Date ________

Total Net Storage Space ________

Occupied Net Storage Space ________

Vacant Net Storage Space ________

Per cent Occupied ______%

Potential Vacant Space ________

Remarks:

NOTE: Information shown is minimal. Additional entries will be made only as directed by installation requirements.

Signature ____________

____

Figure 1. Storage space survey worksheet.

CHAPTER 3

STORAGE PROCEDURES

Section I. RECEIVING

	Paragraph	Page
Introduction	3.1.1.	31-1
Document control	3.1.2.	31-3
Checking incoming materiel	3.1.3.	31-4
Unloading procedure	3.1.4.	31-5
Unloading materiel from railroad cars	3.1.5.	31-6
Unloading materiel from trucks	3.1.6.	31-12
Reporting	3.1.7.	31-12

3.1.1. Introduction

3.1.1.1. General. The receiving operation is a major element in the effective performance of a storage mission. Prompt and accurate receipt of supplies determines, to a great extent, the degree of efficiency maintained during warehousing and subsequent shipment to the consumer. There are many factors which cause a variance in the details of receiving operations; however, certain basic principles as well as responsibilities are universally applicable.

3.1.1.1.1. Receipt of small arms. See chapter 3, section XII for special policy, procedures and controls pertaining to small arms.

3.1.1.1.2. Receipt of classified and other sensitive items. See chapter 3, section XV for special policy, procedures and controls pertaining to classified and other sensitive items.

3.1.1.2. Planning the Operation.

3.1.1.2.1. Planning for receipts breaks into a logical three-part sequence: preliminary, get-ready, and immediate action. Preliminary planning for the ultimate arrival of supplies commences upon receipt of notification that supplies are scheduled for delivery. Upon receipt of notice that supplies are en route or will be delivered at a specified time: the second, or get-ready phase, gets under way. The notice of actual shipment arrival motivates the third planning phase. This last phase immediately precedes the physical aspects of receiving.

3.1.1.2.2. The correct application of information conveyed by advance pre-positioned material receipt documents (DOD Material Receipt Document, DD Form 1486) provided by inventory control points is a requisite of good planning. Basic steps in the use of this information are contained in paragraphs 3.1.1.2.3. and 3.1.1.2.4.

3.1.1.2.3. The DD Form 1486 will be utilized as the materiel receipt document and for the establishment and maintenance of the pre-positioned materiel receipt document file. Information contained in pre-positioned materiel receipt documents will be made available to the storage control activity for the purpose of identifying receipts which require special handling and to identify receipts required for immediate distribution.

3.1.1.2.4. Additional dissemination of prepositioned materiel receipt data will be made to the receiving control point, quality control activity, warehouse operations supervisor, and individual storekeepers or warehousemen concerned to inform these elements or personnel of:

3.1.1.2.4.1. Approximate date of arrival.

3.1.1.2.4.2. General storage location.

3.1.1.2.4.3. Type and quantity of supplies.

3.1.1.2.4.4. Those receipts from vendors on which discount provisions are applicable. Receiving documents in these cases will be annotated to reflect discount information in a manner that will expedite processing.

3.1.1.2.4.5. Requirements for obtaining copies of contracts, drawings, specifications, and related technical data.

3.1.1.2.5. The storage operations control activity, at time of initial receipt of shipment arrival notices, assures the availability of appropriate space to store incoming receipts; schedules and plans handling operations to maintain a continuous, uniform, and maximum rate of the receiving activity and transmitted to the stock accounting activity in the time limitations established by AR 725-50.

3.1.2.2. Controls will be established to aid on time processing of all receipts. The means by which this control will be accomplished is at the option of the appropriate CONUS or oversea commander. Information which must be available, as a minimum, is length of time material has been on hand, quantity on hand in terms of line items (estimate if information is not available) and tons, and the location within the receiving area where the receipt is being temporarily stored. This information must be available on a continuous basis without resorting to a physical inventory or survey of receipts on hand.

3.1.2.3. Local operating procedures will contain provisions to assure that the transmission of receiving data to the prescribed agency will not be delayed after receipt of the inbound shipment.

3.1.2.4. Immediately after transmission of materiel receipt data by electrical means (transceiver or telephone), the substantiating copies of receiving documents will be forwarded by airmail to the stock accounting activity. These documents will be appropriately signed and stamped "Previously Reported."

3.1.2.5. When circumstances prevail where condition of customer returns precludes proper identification, classification, and count upon receipt, shippers' count and item description will be accepted pending identification, classification, and count. Such property will be classified to the appropriate suspended condition code and receipt data reflecting this code furnished the accountable agency as prescribed by AR 725-50. The material will then be placed in segregated storage until proper identification and classification are accomplished.

3.1.2.6. Appropriate controls will be established to assure that the receipt document number will be the same when reporting true classification and count of materiel as that previously used in reporting suspended condition.

3.1.3. Checking Incoming Materiel

3.1.3.1. The accurate inchecking of supplies is a prime requisite to subsequent efficient storage, record control, and shipping activities. The importance of this cannot be too strongly stressed. The checking of inbound shipments will include:

3.1.3.1.1. Checking all seals on all rail boxcars and trucks for condition and for verification that serial numbers agree with those recorded on bills of lading, advance shipping documents, notice of shipment, etc.

3.1.3.1.2. A thorough and accurate check to determine that merchandise and related documents are in order.

3.1.3.1.3. Assurance that documents reflect the following minimum information prior to the release of receiving records by the checker for additional processing:

3.1.3.1.3.1. Date and time received.

3.1.3.1.3.2. Consignor.

3.1.3.1.3.3. Consignee.

3.1.3.1.3.4. Procurement instrument number (applicable only to receipts from procurement).

3.1.3.1.3.5. BL number of freight bill number (if known).

3.1.3.1.3.6. Carrier and carrier number.

3.1.3.1.3.7. Seal numbers (if any).

3.1.3.1.3.8. Federal stock number or other appropriate identifying number.

3.1.3.1.3.9. Item identification, including color, type, size, serial numbers, etc.

3.1.3.1.3.10. Number of containers.

3.1.3.1.3.11. Package numbers (if known and where applicable).

3.1.3.1.3.12. Unit of issue.

3.1.3.1.3.13. Condition code.

3.1.3.1.3.14. Total number units received.

3.1.3.1.3.15. Total weight received.

3.1.3.1.3.16. Total number units over, short, or damaged (as applicable).

3.1.3.1.3.17. Storage locations (as applicable).

3.1.3.1.3.18. Checker's signature.

3.1.3.1.3.19. Control number.

3.1.3.2. Supervisors and quality control personnel will periodically spot check the validity of the checker's count. Results will be appropriately recorded and corrective action taken, as necessary. These quality control measures are vital for maintaining accuracy of stock records.

3.1.3.3. Appropriate documents (AR 725-50) will be used in tally-in materiel. The quantity of supplies actually unloaded and accounted for should be the only figures recorded by the checker in the "quantity received" portion of the receiving document. Except for small arms, unless outer containers show evidence of damage or having been tampered with during shipment, it is not mandatory to open containers marked to show a standard quantity contained therein in order to verify contents.

There is no reason, ordinarily, to open individual unit containers, such as bottles, sets, packages, etc., unless one or more of the defect causes shown above exist. The number of containers that will be opened (excluding inspection at destination shipments) will be based on item, past record of contractor, method of pack, or other pertinent factors.

3.1.3.4. Existing inspection and procurement directives determine place, time, and type (complete, spot, laboratory analysis) of inspection to be made pending determination of acceptance. It is necessary, however, that a determination be made by responsible storage personnel, prior to the start of unloading operations, of the type and degree of inspection required for inbound shipments. All commodities that require acceptance inspection at destination, whether complete inspection, spot inspection, or laboratory analysis, will be segregated and identified as materiel awaiting inspection. However, proper coordination will be accomplished to permit inspection "in line" so as to minimize the amount of handling and additional control required. (See Chapter 3, Section VIII, for details.)

3.1.3.5. All over, short, or damaged materiel received will be processed in accordance with AR 55-355 or chapter 3, section V, of this manual, as applicable.

3.1.4. Unloading Procedure

3.1.4.1. Certain steps in the unloading operation will take place *after* the arrival or spotting of the carrier conveyance and *before* actual physical handling of the supplies begins. These steps include, but are not confined to, the following and are the responsibility of the warehouseman in charge and the checker or foreman responsible for receiving operations:

3.1.4.1.1. Flagging the traffic end of rail cars with a blue-colored flag will be in accordance with DA Pamphlet 55-1.

3.1.4.1.2. Opening of conveyance doors with due regard to safety.

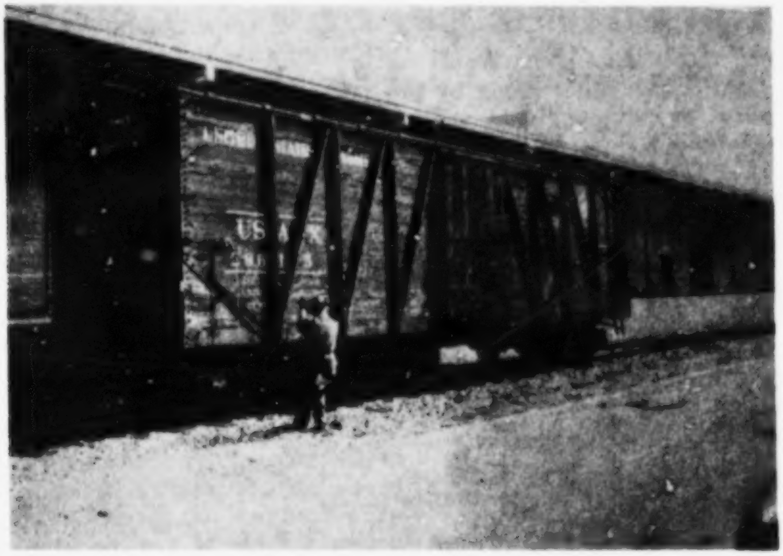


Figure 3. A hook and chain device illustrates one of many effective means of opening car doors which resist normal methods. Technique applies equally well to cards positioned adjacent to docks, except that user, as a safety precaution, would pull chain more directly toward himself standing on dock.

3.1.4.1.3. Visual inspection of containers within the car or truck to determine degree of damage incurred during transit, if any. This is necessary in order to plan for inspection of contents by claim officer, transportation officials, or claim agent of the carrier, if and when necessary, prior to unloading of supplies.

3.1.5. Unloading Materiel From Railroad Cars

3.1.5.1. The physical handling and storage of received materiel will necessitate the use of varying methods and techniques, depending upon such factors as:

3.1.5.1.1. Whether carload or less than carload (LCL).

3.1.5.1.2. Whether quantity received is for single or for multiple locations.

3.1.5.2. It is generally feasible that mixed loads of incoming materiel, i.e., consisting of supplies to be stored in multiple locations, should be unloaded at a central receiving or freight consolidating facility, whether full load or LCL.

3.1.5.3. Different types of conveyances demand the use of different types of unloading equipment. For example, gondola cars are usually unloaded by crane; flat cars by crane fork-lift truck, or by a towing vehicle; box cars and trucks by forklift trucks, sometimes employing conveyors, dollies, pallet trucks, etc. Preliminary actions consist of providing for labor and equipment; opening of conveyance; placement of loading plate or mechanical, adjustment ramp; and removal of dunnage, if any. In removing materiel from the carrier, the factors in paragraph 3.1.5.4. will require consideration.

3.1.5.4. Where load characteristics are compatible, palletization and use of forklift trucks for unloading constitute one of the most common handling methods. This method will entail proper selection of vehicle type to provide for sufficient collapsibility of mast for clearance if fork truck will be required to enter carrier conveyance. Normally, at a warehouse unloading site, the lift truck with load can proceed directly to the storage location; however, if distances are excessive (in excess of 400 feet), tractor-trailer trains are generally more economical.

3.1.5.4.1. Where conditions do not favor use of lift truck in unloading, conveyors, dollies, skids, or other methods will be employed.

3.1.5.5. Lading marked with specific handling instructions will be handled in accordance with such instructions. When special slings, attachment fittings, or other equipment are necessary, such equipment will be obtained and used.

3.1.5.6. Regardless of method employed proper balance between equipment and manpower is important. In lift truck-pallet combination, one lift truck and operator can generally keep pace with two laborers palletizing within the conveyance and in many cases can service unloading operations from more than one conveyance.

3.1.5.7. Unit load preparation, at time of receipt, will be practiced when it is known that future shipment of the item(s) will be by unit load. In unit load construction, as well as in all palletizing, use of proper palletizing methods and pallet patterns is important. (See chapter 4, section VI.) Pallet support sets can be used to good advantage in palletizing many items of materiel. (See chapter 4, section II.) It is also important that palletizing not be overdone. Certain supplies are packaged in containers designed for transfer and storage without being palletized.

3.1.5.8. When unloading at ground level, use of portable incline ramps will provide a means for within conveyance pickup by forklift truck. Portable docks may be used in the absence of incline ramps or in conjunction therewith if load characteristics warrant. The lift truck can also be used to pick up load at car door from ground level; however, this method is costly and requires excessive manhandling of materiel. This system of unloading will be used only as an emergency expedient.

3.1.5.9. The responsibilities and duties of unloading personnel and the supervisor concerned do not cease with the removal of the final item from the carrier conveyance. Prior to release of the equipment and manpower for other duties, the car plate or ramp will be removed from the car and placed in a storage rack or positioned in the proper manner at another location for use in loading or unloading. Unloaded cars will be thoroughly cleaned, with particular emphasis placed on the removal of dunnage strips, strap-

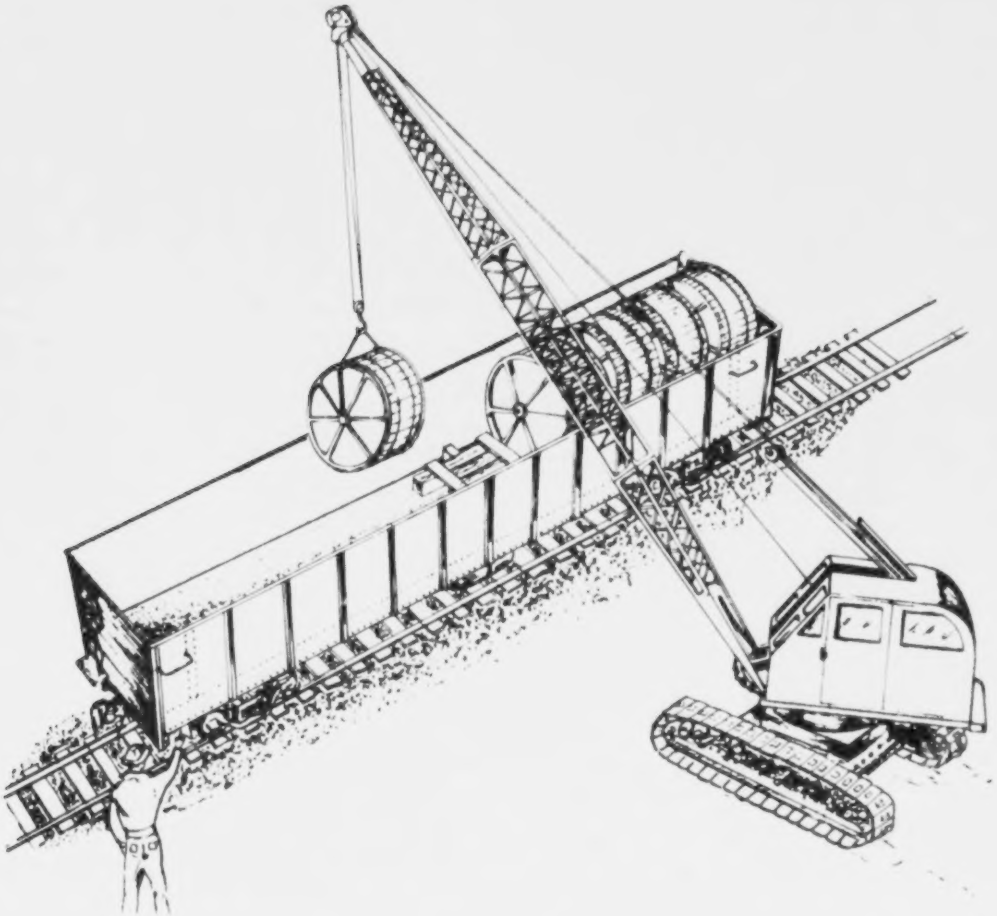


Figure 4. Due to design features of gondola cars, the normal practice of servicing is by use of crane. This type car is commonly used for shipment of items that would not be conveniently adaptable to the doorway limitations of box cars while still requiring the load staying features of sides and ends.

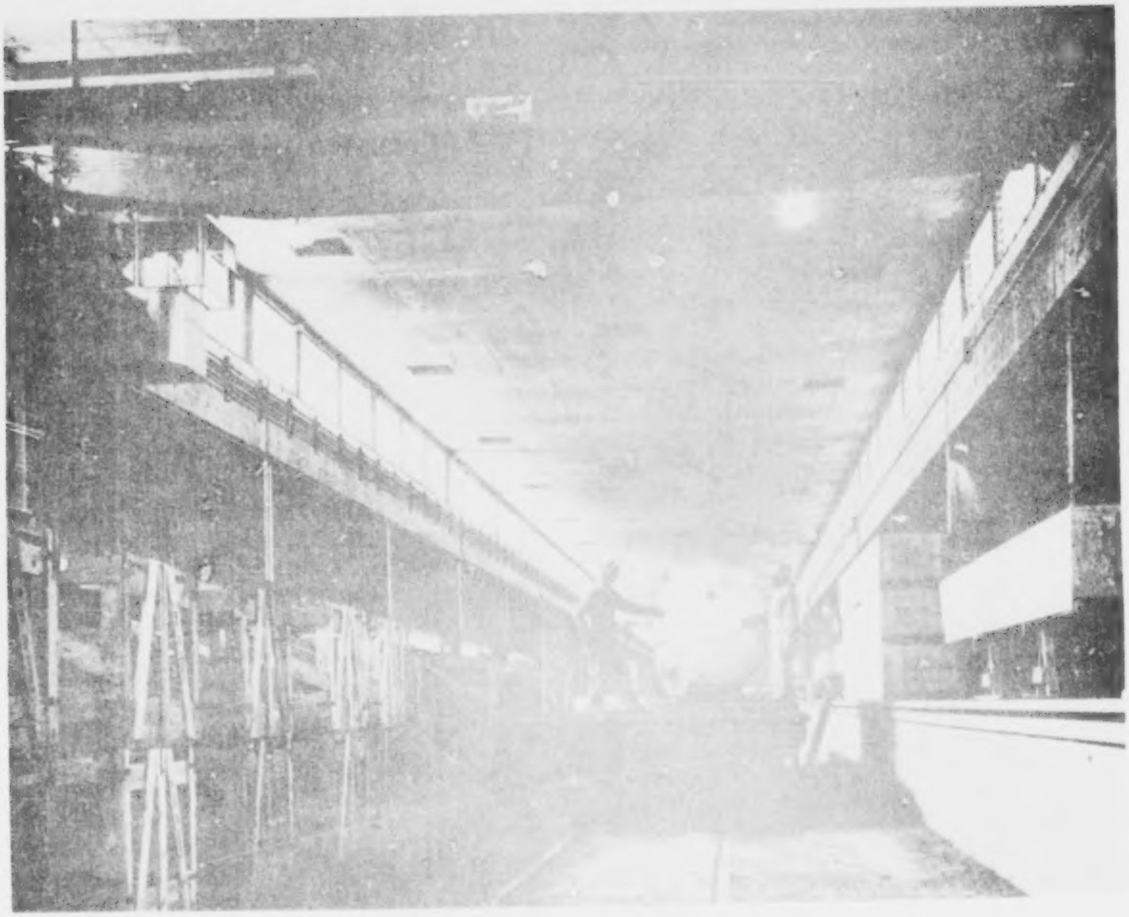


Figure 8. Missile being [illegible]

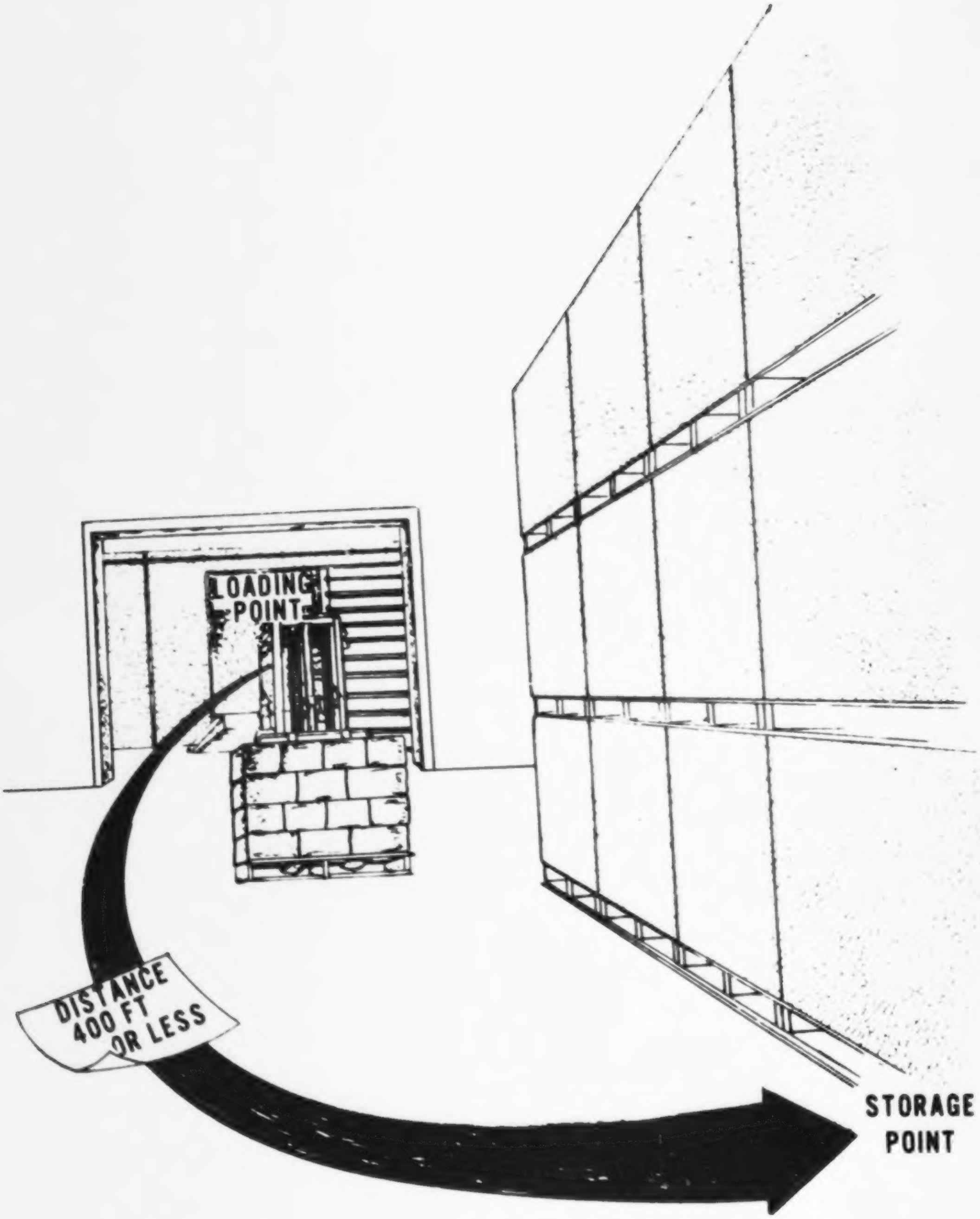

LOADING POINT
DISTANCE 400 FT OR LESS
STORAGE POINT

Figure 6. Ordinarily a fork lift truck should not carry material in excess of 400 feet. For longer hauls, supplement trucks, with "between points" carrying equipment such as tractor-trailers, trucks, rail cars.

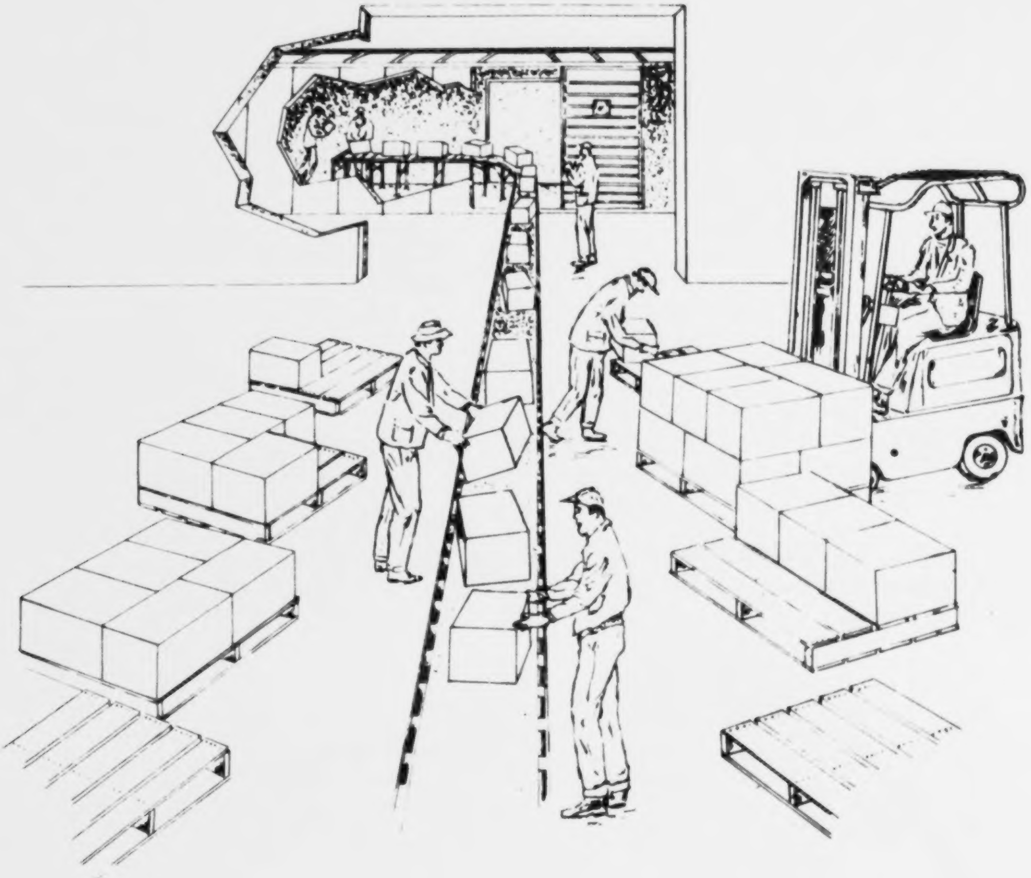


Figure 7. Receipt of shipments containing multitudinous line items. Packages are segregated as palletized. For high speed unloading, conveyor line of the type depicted within the car may also be extended into opposite end for simultaneous cargo discharge. Note position of shipment checker.

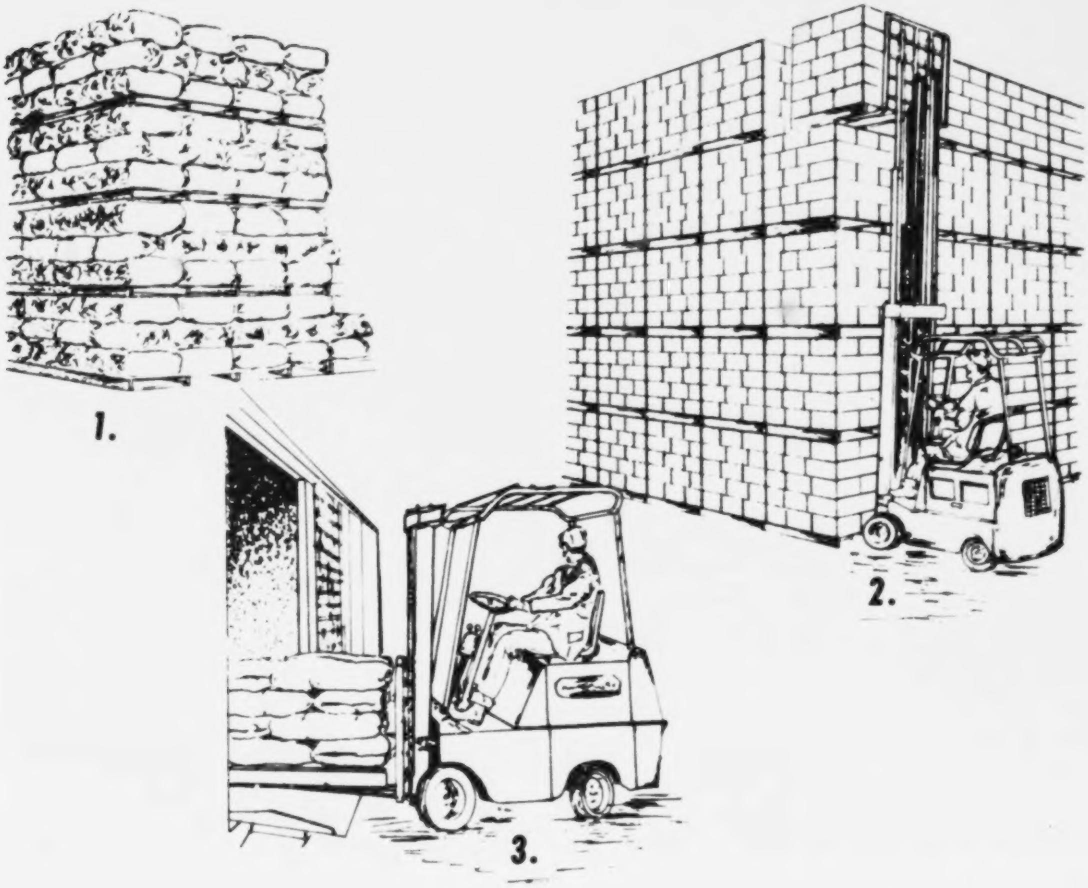


Figure 8. The above depicts factors which should emphasize the importance to storage operations of proper palletization of supplies.

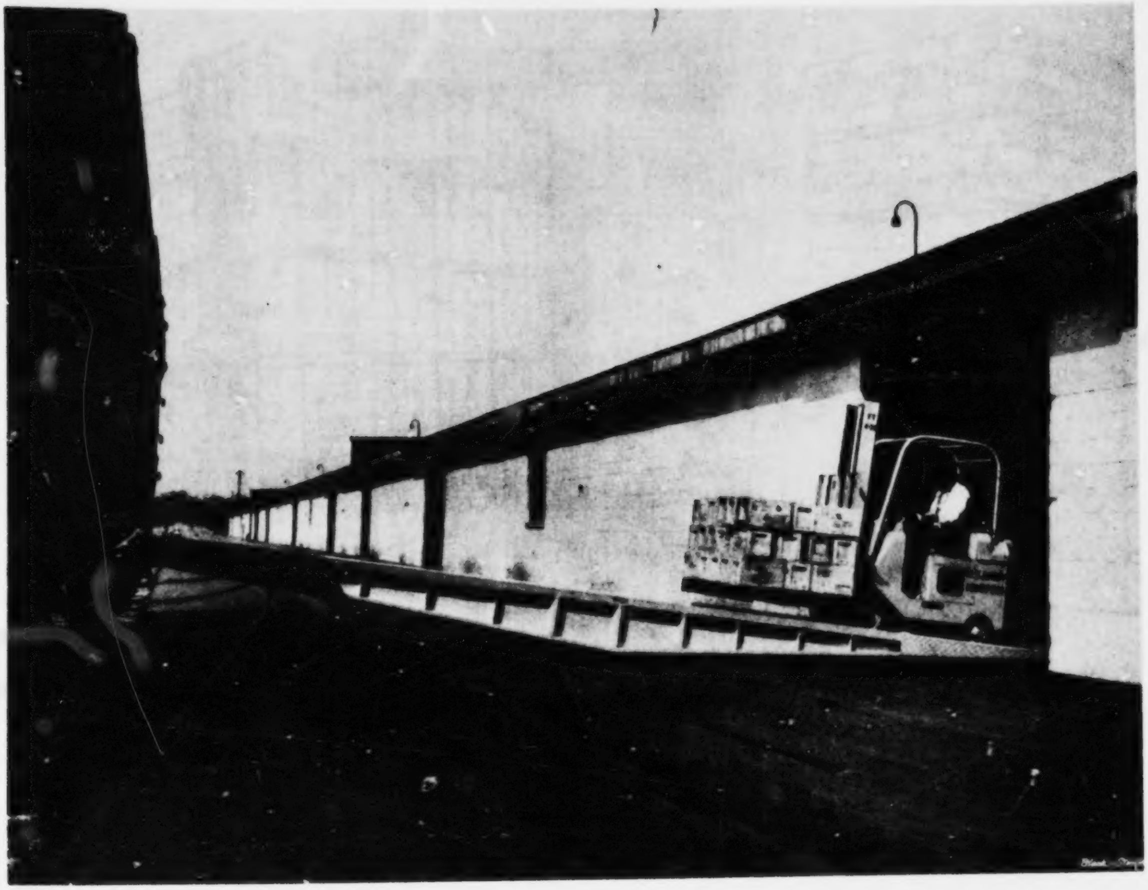


Figure 9. Through use of portable ramps, a preferable means of effecting direct unloading from rail cars by lift truck in those areas where loading docks are not available.

ping, nails, or other protruding objects that will delay subsequent loading operations or cause damage to lading. Docks and areas adjacent to unloading site will be cleaned of all debris. Car door gates removed from unloaded cars and in reusable condition will be retained for use with subsequent outbound loads. This retention of prefabricated dunnage for subsequent use *does not* apply to metal bars, racks, tie chains, etc., that are obviously an integral part of the car of its equipment. Flags will be removed from ends of rail car and action taken to indicate car is free for subsequent internal movement or return to carrier.

3.1.6. Unloading Materiel From Trucks

Principles advanced in paragraph 3.1.5. will be followed for materiel received by truck. For additional details, see paragraph 3.1.6., TM 743-200.

3.1.7. Reporting

3.1.7.1. Reports on receiving performance will be submitted by CONUS storage installations in the intervals and format prescribed by the US Army Supply and Maintenance Command.

3.1.7.2. Oversea storage installations will submit receiving performance reports as prescribed by the appropriate oversea commander.

CHAPTER 3

STORAGE PROCEDURES

Section II. SHIPPING

	Paragraph	Page
General	3.2.1	32-1
Documentation	3.2.2	32-1
Preparation of supplies for shipment	3.2.3	32-2
Loading procedures	3.2.4	32-3
Loading and offloading procedures	3.2.5	32-4
Unit loads	3.2.6	32-4
Other considerations	3.2.7	32-4
Mutual security program shipments	3.2.8	32-6
Shipment of supplies by CONEX, Roll-on/Roll-off (RO/RO) Trailers and sea van	3.2.9	32-9
Reporting	3.2.10.	32-13

3.2.1. General

3.2.1.1. Shipment planning commences when the materiel release order is received. Shipment planning personnel will utilize local item data, including as a minimum, the weight, cube, dimensions, freight classification description number, water commodity code, and label and other special handling codes. During the shipment planning process, planners must consider each pertinent operational phase and functional activity included in the handling and transport process.

3.2.1.1.1. The shipment planning activity will develop procedures to assure the orderly and economical processing of customer orders through the supply system.

3.2.1.1.2. Certain shipments will require special handling procedures. Examples of such procedures are those developed for Issue Priority Groups I and II, for items shipped via parcel post, and for items being issued within the installation.

3.2.1.1.3. Small arms shipments will be processed in accordance with the requirements prescribed by chapter 3, section XII of this manual.

3.2.1.2. Controls will be established to alert management and operations personnel when a shipment or line item requires special attention. These controls may be either administrative or procedural or combinations thereof. Line item summary reports will be compiled daily and placed at the disposal of local storage managers. These reports will reflect as a minimum, the following:

3.2.1.2.1. Line items on hand at start of day.

3.2.1.2.2. Line items received.

3.2.1.2.3. Line items completed.

3.2.1.2.4. Line items shipped on time.

3.2.1.2.5. Line items shipped late.

3.2.1.2.6. Line items on hand at end of day.

3.2.1.2.7. Line items due out by date.

3.2.1.2.8. Reasons for late shipments.

3.2.1.3. Information on ammunition shipments can be found in chapter V, section II, of this manual.

3.2.2. Documentation

3.2.2.1. Requisition and issue procedures have been designed to speed up processing and shipping time through the use of Automated Data Processing (ADP) and Punched Card Machine (PCM) systems. Depot shipping activity will be provided DOD Single Line Item Release/Receipt Documents and Shipment Planning Worksheets for control and shipment purposes. The worksheet is designed for mechanical printing or typewriter preparation.

3.2.2.2. The worksheet is designed to consolidate the requisition for one customer into one shipment unit. It will provide the weight, cube, freight classification, required delivery date, when specified, transportation control number, and other data needed for movement planning.

3.2.2.3. Required advance data on shipments will be forwarded to the installation's traffic management activity. The shipment planning worksheet, as applicable, will be utilized for this purpose.

3.2.2.4. Completed documentation will be distributed as outlined in DOD 4500.32-R and AR 725-50.

3.2.3. Preparation of Supplies for Shipment

3.2.3.1. Stock Selection.

3.2.3.1.1. Stock selection includes the assembling and consolidating of materiel into a centralized area for shipment preparation. Two methods of stock selection are the progressive method and the simultaneous method.

3.2.3.1.1.1. The progressive method is the selection of line items in location sequence by customer.

3.2.3.1.1.2. The simultaneous method is the selection of line items in location sequence for all customers at the same time.

3.2.3.1.2. Direct loading into the carrier's conveyance from the storage location will be accomplished, when feasible, to minimize the amount of labor and materials handling equipment required. The influencing factors in this regard are volume, condition of containers, necessity for verifying the stock, accessibility of the oldest supplies, availability of carrier's equipment, and any special packing, or processing requirements (fig. 1).

3.2.3.1.3. Oldest supplies will be selected and shipped first. Circumstances which may cause deviation from this requirement will be judged on the individual merits of each case.

3.2.3.2. Materiel Release Denials.

3.2.3.2.1. A materiel release denial, partial or complete, is formal notification issued by a storing activity that a specific quantity or item required by shipping directive is not available due to stock exhaustion or other reason.

3.2.3.2.2. The goal for denials in storage operations is elimination rather than considering a given quantity or percent of denials as acceptable. Storage managers will exert every effort to meet this goal through consistent upgrading of storage operations by application of an effective quality control program.

3.2.3.2.3. A materiel release denial is supply failure. Commanders and top echelon storage managers will be responsible for taking *positive* and *continuous* action to be aware of and reduce the occurrences that result in materiel release denials. The main causes of this type supply failure are:

3.2.3.2.3.1. Duplication of receiving records.

3.2.3.2.3.2. Incorrect items reflected as received.

3.2.3.2.3.3. Incorrect stock location records.

3.2.3.2.3.4. Service stock number or part number instead of federal stock number reflected on container.

3.2.3.2.3.5. Failure to make or record changes in federal stock numbers.

3.2.3.2.4. Storage activities will process materiel release denial in accordance with AR 725-50.

3.2.3.2.5. Numerous reasons can be cited as the cause of materiel release denials. While many denials are the direct result of action or lack of action within a storage operation, others are the result of actions beyond the control of storage operations. Exhaustive, after-the-fact attempts to determine final responsibility with such a variety and number of potential causes are time consuming, uneconomical, and frequently result in no answer at all, or one that contains doubt as to the true cause. Systematic quality control checks of the storage operations representing potential cause of denial will be accomplished as a routine day-to-day operation to disclose the areas

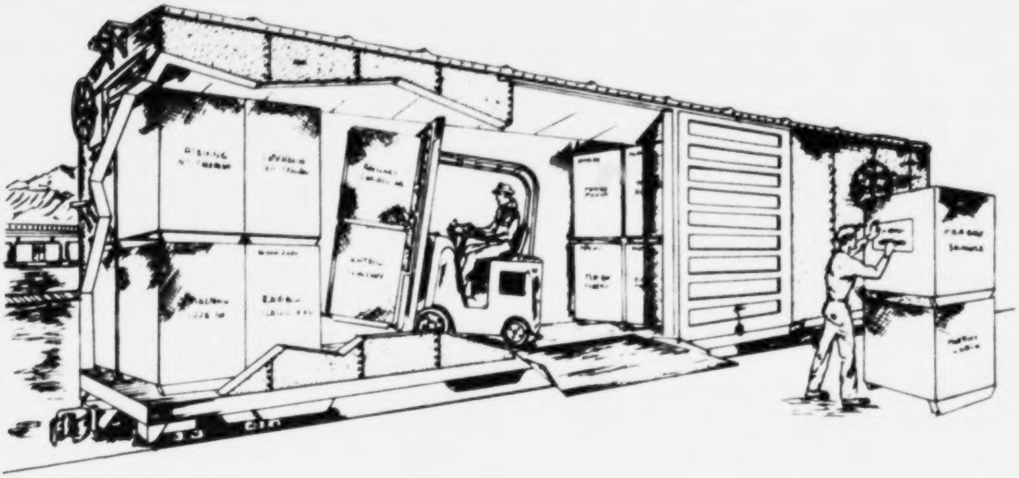


Figure 1. Whenever possible, shipments should be processed with a minimum of handling. Above method depicts a system where marking of packages is accomplished in conjunction with loading operation. Depending on the degree of marking required, it may be frequently possible to mark packages after they are stowed in carrying conveyance thereby precluding necessity for lift truck dropping and then repicking up packages on subsequent trip cycle.

requiring corrective action *before the fact.* This will minimize the necessity for disruptive research at time of shipment and preclude the necessity for exhaustive research as to cause after the denial.

3.2.3.3. Packaging.

3.2.3.3.1. Preservation, packaging, and packing operations will be organized to permit an even flow of work. Detailed planning by the shipment planning activity will include packaging; consolidation; packing of items having a similar freight rate or classification in the same container; and a determination of the mode of shipment. Controls will be established to preclude all unnecessary preservation, packaging, and packing.

3.2.3.3.2. Packing normally will be conducted in a centralized location which will provide direct materiel flow, facilitate maximum consolidation, and be conducive to efficient packing practices.

3.2.3.3.3. The necessity for rapid processing of high priority shipments and late requisitions frequently places a burden on the shipping operation. To ease these conditions, it may be advisable to designate a packing line and maintain it sufficiently flexible to process these high priority shipments with minimum disruption of routine operations.

3.2.3.3.4. Preservation, packaging, and packing of small arms will be accomplished in accordance with the requirements prescribed in chapter 3, section XII of this manual.

3.2.3.3.5. The marking of packing containers will be in accordance with MIL-STD-129, AR 725-50, and DOD 4500.32-R.

3.2.4. Loading Procedures

3.2.4.1. Loading procedures prescribe the methods of stowing the supplies into carrier's equipment and the related actions required to provide for a safe arrival at destination.

3.2.4.2. When the mode of transportation has been determined, storage and traffic management personnel will jointly plan the loading. The plan will specify where and when the carrier's conveyance will be placed for outloading, the requirements for specialized equipment, and necessary loading personnel, materials handling equipment, and checkers. Timely and accurate spotting of carrier's equipment will assure loading within prescribed free time and will allow effective coordination with other storage activities.

3.2.4.3. When feasible, all line items for one consignee will be shipped at the same time. In addition, consolidation of small lot shipments to multiple consignees for shipment to a break-bulk point will be effected to the maximum practical extent. Shipments with high priorities or short due dates will not be consolidated with lower priority shipments, unless the closest required delivery date can be met without the use of premium transportation. To this end, local traffic management and shipping operations personnel will exert joint and maximum effort.

3.2.4.4. Safety of personnel in the loading of supplies is an important factor. Storage supervisory personnel will assure that necessary protective measures are taken to insure a safe operation.

3.2.4.4.1. During loading operations, a blue colored flag will be displayed on the traffic end of a rail car where it can be readily seen by rail personnel to prevent the car from being moved or bumped. Where more than one approach is possible, blue flags will be displayed on both ends of the rail car or cut of rail cars involved in the loading operation.

3.2.4.4.2. Car doors will be opened with care to avoid injury. A number of inexpensive mechanical devices are available as aids in opening car doors. A device of this type will be made available to storage personnel and should be used to prevent personnel back strain or injury from falling materiel.

3.2.4.5. Rail cars and motor vehicles received from a carrier which are not suitable for loading, based on a visual inspection, may be rejected and returned empty to the carrier.

3.2.4.6. All equipment received for loading will be thoroughly checked for defects or interior damage that will have an adverse effect on materiel to be loaded. Defective or damaged equipment either will be returned to the carrier or damage corrected prior to loading as dictated by conditions at time of loading.

3.2.4.7. Load patterns for carload or truckload shipments will be developed to provide maximum practical utilization of the available cube and load capacity of the conveyance. Patterns may be developed by mathematical computation of weights and cube of the items based on the inside dimensions and load limits of the car or truck, or by actual placement of a minimum number of containers in the vehicle to establish an acceptable load pattern. An experience chart or table of load patterns should be maintained for commodities often shipped in car or truck load quantities.

3.2.4.8. Blocking and Bracing.

3.2.4.8.1. Shipments must be properly, loaded, blocked, braced, and secured to prevent damage to the lading and carrier's equipment while in transit. Freight that is to be unloaded at a point intermediate to the final destination should be loaded in such a manner as to be readily accessible for unloading at the stopoff point. CONUS shipments will observe as minimum requirements, the methods for loading, blocking, and bracing in or on railcars as set forth in appropriate loading rules of the Association of American Railroads, except that other methods in general use providing equivalent or superior protection may be substituted for the recommended methods set forth in the pamphlets listed in AR 55-355. Oversea areas will be governed by the appropriate regulations developed as a result of agreements reached with the host country or countries.

3.2.4.8.2. Trucking companies, as a rule, do not publish blocking and bracing data, however, the carrier representative may be an aid in solving particular loading problems.

3.2.4.9. Closed type rail and motor equipment will be sealed in accordance with provisions of AR 55-355.

3.2.5. Loading and Offloading Procedures
(TM 743-200)

3.2.6. Unit Loads

Policy with respect to preparation of unit loads will be found in section VI, chapter 4, of this manual, TM 743-200, and AR 746-1 (fig 3) except that small arms will be prepared in accordance with chapter 3, section XII of this manual.

3.2.7. Other Considerations

3.2.7.1. Vital to any effective shipment planning program is the availability of accurate weight data. Accordingly, where a difference in weight exists between actual weight and that recorded on shipment planning work sheet,

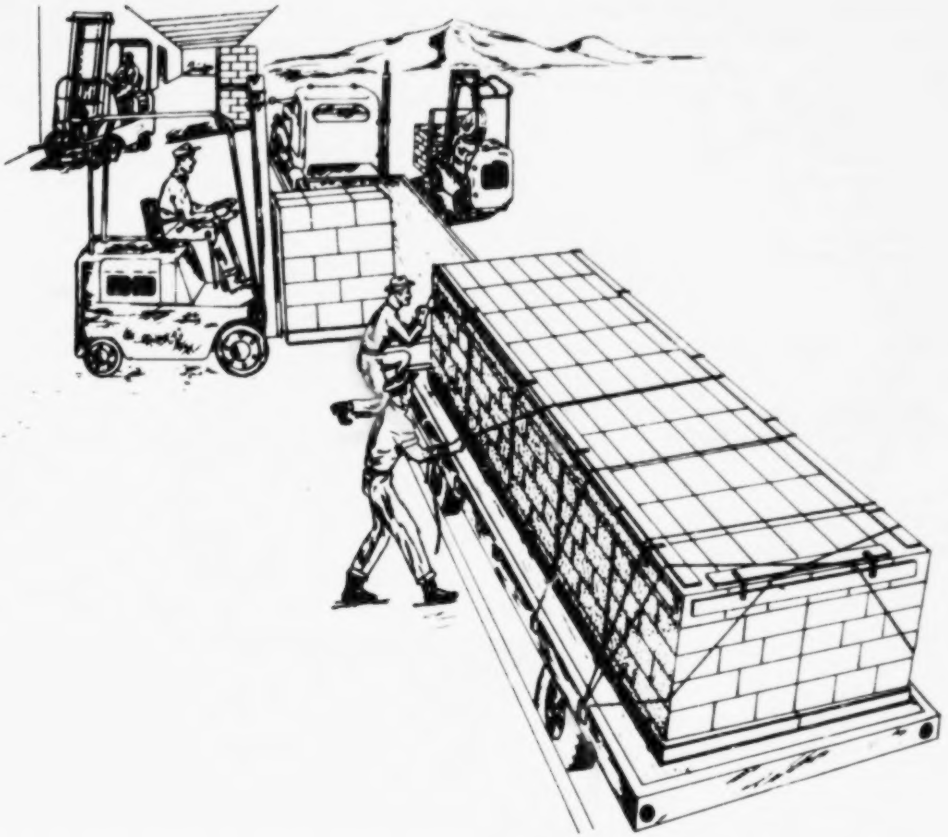


Figure 2. An effective means of moving volume lots of unit loads on flat bed trucks. Lift truck at ground level loads the "away from dock" side of carrier. Another technique for the same basic operation provides for carrier to be reversed after completely loading one side to permit all loading to be accomplished from dock side. However, weight of load, with the possible consequences of extreme carrier lean, must be considered in this method. Securing of load is dependent on features of unitizing as well as circumstances of hauling.

corrections will be made as appropriate. Procedures will contain the necessary detail and control for accomplishing this action during shipment processing. In instances where computer stored weight data are not available, sampling procedures will be instituted to preclude overloading of transportation vehicles or to assure that the Government is not being charged for commodity weight which does not exist.

3.2.7.2. Climatic variations and conditions to which supplies may be subjected must be a freight planning consideration. Items requiring refrigeration must be loaded in refrigerated rail cars or trailers and arrangements for icing will be included in the transportation planning. Those items requiring protection from freezing will be loaded in the proper conveyance. Provisions will be made to identify those items and insure precautionary measures to prevent damage and deterioration. Items requiring refrigerator or heater service should not be packed together with items requiring no protection. Unitization in crates or on pallets of both types of cargo required breakdown and separation of cargo at destination terminals before further transshipment.

3.2.7.3. Lightweight adjustable dock boards and portable ramps with positive means of securing shall be employed where necessary during loading by forklift truck (fig. 3).

3.2.7.4. The loading of heavy or bulky items can be accomplished by numerous methods. The situations vary to such an extent, depending on the items or loading conditions, that it is not practical to mention all of them. A prime requisite in the handling of these items is the safety of personnel and protection of the item. Therefore, attachments or devices that obviate the necessity of attendant personnel working in proximity to the container while loading are most acceptable. Two of the safest and most acceptable devices for the common forklift truck are fork extensions for transportation of an item, and a boom attachment which can be used to move heavy containers into or from confined areas (TM 743-200).

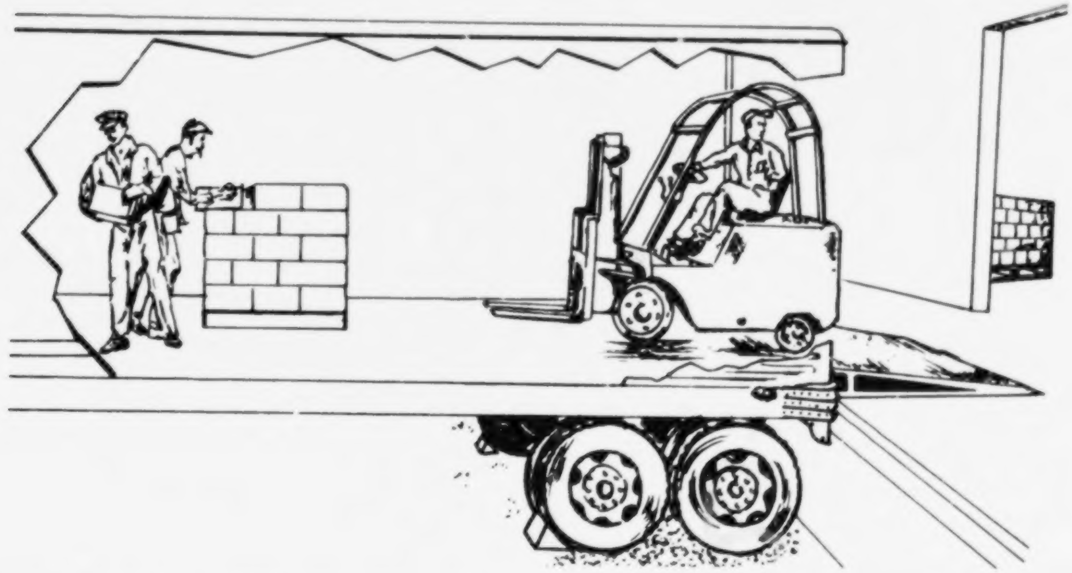


Figure 3. The use of a hydraulic ramp which readily adjusts to varied truck bed heights, plus a low masted forklift truck, contribute to an efficient method for loading highway trailers.

3.2.8. Mutual Security Program Shipments

3.2.8.1. General

3.2.8.1.1. Supply operations within storage of sites under the jurisdiction of the Department of the Army will reflect, in all aspects, the high degree of quality necessary to create a favorable impression of the United States to governments and individuals of countries receiving materiel under this program.

3.2.8.1.2. To promote the desired favorable impression in the shipment of supplies under this program, the following conditions will be adhered to unless specific instructions to the contrary are contained in shipping directives or furnished the shipping installation by separate communication from authorized sources.

3.2.8.1.2.1. Materiel selected for the Mutual Security Program will conform to the appearance and serviceability standards established by AR 795-204 and AR 795-17.

3.2.8.1.2.2. Packaging will be in accordance with chapter 3, section XIV, of this manual. Packaging of *special* Mutual Security Program shipments will be in accordance with *specific instructions* issued for each such shipment.

3.2.8.1.2.3. Exterior containers used for the Mutual Security Program shipments will conform to appearance and serviceability standards established by AR 795-17 and AR 795-204.

3.2.8.1.2.4. Inspection will be made at time of shipment to insure that the correct item, in a serviceable condition, properly packaged and packed, is selected for shipment. Equipment requiring operational test will be tested to insure that it meets the standards outlined in AR 795-17 and AR 795-204. Unless exempted by specific instructions, a preshipment inspection or operational test will be performed if 6 months or more have elapsed since last inspection or test regardless of whether materiel has been stored in controlled humidity space prior to shipment. Deviations from this requirement will be only on the basis of a waiver from authorized sources designated in AR 795-17 or AR 795-204, as applicable.

3.2.8.1.2.5. Equipment scheduled for shipment will have the mileage and hour meters checked to assure that time and mileage do not exceed that accumulated on 25 miles of test driving. Historical records accompanying the equipment will not contain reference to hours of use and mileage accumulated.

3.2.8.1.2.6. United States registration numbers will be treated as prescribed in AR 725-50.

3.2.8.1.2.7. The application of MWO to Mutual Security Program shipments will be governed by the following conditions:

3.2.8.1.2.7.1. All materiel being readied for Grant Aid or Foreign Military Sales shipments will be inspected to insure MWO have been applied or expected in accordance with AR 750-1.

3.2.8.1.2.7.2. For materiel requiring modification being readied for shipment, and where delay appears imminent, the inventory control point will be furnished the applicable shipment identification data, numerical designation of MWO requiring accomplishment, and anticipated time required to apply MWO.

3.2.8.1.2.7.3. Unless waiver is granted by the inventory control point, MWO will be applied to equipment prior to shipment, even though the MWO may state requirement for application at another time or by another echelon.

3.2.8.1.2.7.4. The conditions cited below can constitute justification for a one-time waiver of requirements of AR 750-1 in the application of MWO to equipment destined for shipment under the Mutual Security Program. When one or both of these conditions exist, request for waiver, citing all pertinent information, will be submitted to the inventory control point.

3.2.8.1.2.7.4.1. Required MWO parts are not available, including local procurement or fabrication, and the shipment date cannot be met if held awaiting parts' availability; lack of MWO application will not prevent equipment from functioning nor present a safety hazard.

3.2.8.1.2.7.4.2. Time required to apply MWO is not permissible and lack of MWO application will not prevent equipment from functioning nor present a safety hazard.

3.2.8.1.2.8. Preparation of aircraft for shipment under the Mutual Security Program will be accomplished as prescribed by AR 750-55.

3.2.8.2. Container Selection.

3.2.8.2.1. An essential consideration in the preparation of shipments for recipients under the Mutual Security Program is the selection of packs containers that possess new or like-new appearance and performance capabilities. Shipping containers that bear unsightly stains and discoloration or are weakened or damaged do not meet the necessary standards. To reflect a high standard of appearance and protective capability, definite standards of container selection should be adhered to. However, it is not intended that Mutual Security Program shipments be repacked in new containers when existing containers can be economically restored to satisfactory condition by employing the measures set forth herein.

3.2.8.2.2. Objectionable features in containers are described below. While the listed defects are not all-inclusive, they include the types most commonly encountered. In cases not described, the best judgment of the shipper must prevail.

3.2.8.2.2.1. Wooden containers. Weatherbeaten, wracked, or otherwise misshapen due to faulty construction or previous handling; containing split or broken boards or boards with large knots, an excessive number of knots, or knotholes (as per standards established by specification); excessive space between boards due to shrinkage of lumber or improper construction; split or broken cleats; pulled nails, split or warped frame members or sheathing; decayed or rotted members (usually caused by excessive exposure to wet weather conditions, most frequently present in base sections of crates).

3.2.8.2.2.2. Cleated containers. Plywood, solid fiberboard, or veneer board paneling. Split, loose or missing cleats or loosened fastenings; punctures or delaminations in paneling.

3.2.8.2.2.3. Wire bound boxes and crates. Broken binding wires, broken or excessively split boards, or missing or broken cleats.

3.2.8.2.2.4. Plywood drums. Punctures and delamination defects or split or deteriorated heads.

3.2.8.2.2.5. Wood barrels. Split or loose heads or loose hoops and staves.

3.2.8.2.2.6. Fiberboard boxes. Loose top and bottom flaps or excessive void between outer flaps at center (RSC style box); torn, frayed, and split score lines or split manufacturer's joints; punctured or badly scuffed or torn liner surfaces or excessive crushed or squashed appearance.

3.2.8.2.2.7. Fiberboard drums. Punctures, dents, and torn exterior surfaces or rusted or dented metal tops and bottoms.

3.2.8.2.2.8. Metal drums and cans. Dents, rust and abrasions, or loose, missing, or twisted bails.

3.2.8.2.2.9. Bales, bundles, sacks, and rolls. Tears, rot, and other defects that weaken the covering, or rusted or loose strapping or tie wires.

3.2.8.2.2.10. Textile and multiwall paper shipping sacks. Tears, punctures, delamination, loosened or ripped seams, or loose wire ties.

3.2.8.3. Container Acceptance Criteria/Rehabilitation Techniques.

3.2.8.3.1. Strapping. The number and size of straps will comply with existing specifications governing oversea shipment of Army supplies.

3.2.8.3.2. Markings. Containers with markings that are incomplete, incorrect, illegible, or misleading will be correctly remarked. Remarking will be done with matching color to that used in original markings. Yellow or white marking is acceptable on olive drab containers.

3.2.8.3.3. Painting. Over-painting is applicable on all types of containers and particularly where only partial obliteration of surface is required. Obliterating paint used on painted containers will match as nearly as possible the original color of the container. Sand color 30277 of Federal Standard 595 will be used on unpainted boxes. Application may be effectively accomplished by brush, roller, or spray. Care should be exercised to avoid applying the coating too thick, since subsequent peeling will possibly occur.

3.2.8.3.3.1. Containers, such as wooden boxes, crates that are sound and free of defects and cannot be adequately or economically improved in appearance by partial sanding or use of obliterating paints will be completely painted. Partial obliteration, when applicable, will be neatly accomplished in a square or rectanglular pattern. The minimum width to be obliterated on wooden boxes will be the width of a board. On containers without exterior battens, the entire length of the board will be obliterated. For containers with exterior battens or cleats, the entire surface between the cleats or battens will be obliterated. An exception would be those containers on which the marking to be obliterated is located between straps. In this instance, the length may be limited to the area between the straps Small containers will have the entire panel obliterated.

3.2.8.3.3.2. Use of powered sanding machine has proved to be economical and effective in removing markings from flat wooden surfaces. An advantage in this method is that immediate application of new markings can be accomplished.

3.2.8.3.4. Fiberboard Boxes.

3.2.8.3.4.1. V board fiberboard boxes, weather-resistant class, are acceptable as exterior containers for shipment to military assistance recipients, when approved packaging specifications permit the use of these containers as a normal procedure.

3.2.8.3.4.2. Fiberboard boxes are acceptable for parcel post or air shipments when permitted by the directives governing these types of shipments.

3.2.8.3.4.3. Triple-wall fiberboard boxes conforming to class 2 of PPP-B-640 are authorized for the shipment of multipacks to military assistance recipients.

3.2.8.3.4.4. Voids between outer flaps (type RSC) where serviceability is not affected will be closed by application of suitable waterproof tape. Slight tears or splits may also be repaired by this method, if not occurring on more than 5 percent of the containers in any one shipment.

3.2.8.3.5. Wooden Containers. Containers will be rejected when they are weatherbeaten and show warping and excessive shrinkage; when fasteners are no longer effective and cannot be made effective; when dry rot, termite infestation, or other conditions conducive to eventual unsuitable deterioration are evident; and when materials used in the fabrication of the container (skids, flooring, sheathing; etc.) present an unsightly appearance and cannot be economically replaced. If economical, containers that present an unsightly appearance but are serviceable will be restored. Defective members will be replaced with boards of matching dimensions and, insofar as practicable, with matching color. Scrabbing over old members is not acceptable.

3.2.8.3.6. Wirebound Boxes. Containers that cannot be adequately closed due to breakage of wire closures may be closed by splicing the closure wires, clipping the wire close to the first staple on both sides of the break, and securing the lid with tensioned bands.

3.2.8.3.7. Wooden Barrels. Split heads will be replaced and staves retightened by driving the hoops tight and level and securing them in position. Loose heads will be tightened by seating them into the croze and then tightening the hoops.

3.2.8.3.8. Metal Drums—Reusable Containers.

3.2.8.3.8.1. Containers that are heavily damaged or rusted will not be used. Containers that are damaged or rusted but are repairable may be used provided they can be economically restored to like-new appearance. Minor indentations, at other than seams or welds, will not be a cause for rejection. Rusted surfaces will be buffed clean and repainted with matching color. Where acceptable matching color is not attained, the entire drum will be repainted.

3.2.8.3.8.2. In those cases where metal reusable containers have been developed for shipment of assemblies such as engines or transmissions, or similar items, these containers may be used for Mutual Security Program shipments. Shipments will be billed accordingly.

3.2.8.3.8.3. Reusable containers, basic issue list item containers, and other containers which have been specially designed for an item or a group of items will be subject to criteria outlined above. However, as an alternative to replacing individual boards and sheathing on containers, which are otherwise structurally sound, these special containers may be fully covered with 1/4-inch or 5/16-inch plywood, container grade, to meet the appearance standards. Lifting devices, fasteners, ventilator covers, special blocking, etc., must present a satisfactory appearance and must be serviceable. Loose lag screws or wooden screws will be tightened or replaced, using the next larger size.

3.2.8.3.9. Bales, Bundles, Sacks, and Rolls. Tears in textile covers may be closed by sewing. Faults in barrier (paper wrappings) may be corrected by applying suitable waterproof tape. Extensive repair requirements ordinarily will necessitate complete recovering.

3.2.8.3.10. Crates. Large heavy items whose weight exceeds the limitations of wooden boxes will be shipped in specification open or sheathed wooden crates, as appropriate. Lumber, fastenings; etc., used in new crate construction, will meet the quality limitations prescribed in the appropriate specification. Crates containing materiel selected from stock and which, while in storage, have become weatherbeaten, damaged, or otherwise partially deteriorated, will be restored in a manner similar to that prescribed for wooden boxes or recrated as circumstances dictate.

3.2.8.3.11. Government Furnished Property (GFP). Items which eventually will form a part of a Mutual Security Program shipment, but which are first to be forwarded as GFP to a contractor's plant for assembly with other components prior to preparation of the complete item for oversea shipment, will be afforded only level C protection. This may be accomplished in any manner acceptable to the common carrier, and that will insure safe delivery to that first destination. Interdepot shipments of materiel required for set assembly, basic issue list items; etc., as part of a Mutual Security Program shipment to be shipped from an assembly depot will meet all standards cited herein, except packaging will be consistent with ultimate use by the receiving depot.

3.2.8.4. Interpretation and Clarification. Interpretation and clarification regarding marking, packing, packaging, documentation, and shipment of MAP materiel will be referred to the Army Development and Readiness Command Packaging, Storage, and Containerization Center in CONUS and to the appropriate oversea commander in oversea areas.

3.2.8.5. Notice of Availability. Notice of availability will be furnished as prescribed in AR 725-50.

3.2.9. Shipment of Supplies by Conex, Roll-On/Roll-Off (RO/RO) Trailers, and SEAVAN

3.2.9.1. General. Maximum practical use will be made of the advantages inherent in cargo transporter (CONEX), RO/RO semitrailers (stake and platform or van), the RO/RO method of shipment, and SEAVAN (Government or carrier owned vans with detachable running gear).

3.2.9.2. Definitions.

3.2.9.2.1. CONEX. A steel reusable container standardized as "cargo transporter" in two sizes identified as type I and type II. Controlled humidity transporters are designated type II (CH) and have the same exterior dimensions as the general purpose type II transporters. Following are the characteristics of each type:

	Type I	*Type II*	*Type II (CH)*
CARGO CAPACITY			
Cube	135 cu ft	295 cu ft	268 cu ft
Weight	9,000 lb	9,000 lb	9,000 lb
EXTERIOR CUBE	184 cu ft	365 cu ft	365 cu ft
TARE			
Weight	1,050 lb	1,500 lb	2,050 lb

3.2.9.2.2. Roll-On/Roll-Off (RO/RO). A term to describe the method whereby cargo carrying semitrailers and other military vehicles are rolled, towed, or self-propelled directly into or out of RO/RO ships.

3.2.9.2.3. Roll-On/Roll-Off Trailer or Wheeled Vehicle. A RO/RO trailer is a cargo carrying vehicle which moves between storage installations or vendor plant and the using activity via RO/RO ship. The semitrailer may be a stake and platform type (18 STON), or a van (regular or reefer) type (18 STON or 12 STON). A RO/RO wheeled or tracked vehicle may be a complete unit in driveaway condition. The open trailers and trucks can often be used in transport of empty CONEX-RO/RO shipment. Loaded CONEX can be moved advantageously in RO/RO ship service.

3.2.9.2.4. SEAVAN. A large shipping container of the size and configuration of a truck semitrailer which is demounted from its chassis during ocean movement. While the dimensions of SEAVAN's vary from 20 to 40 feet in length, a representative size of standard SEAVAN has the following characteristics:

	External	*Internal*
Length	20 ft	19 ft, 5 in.
Width	8 ft	7 ft, 8 in.
Height	8 ft	7 ft, 4 in.

3.2.9.3. Load Selection Criteria.

3.2.9.3.1. Criteria governing the use of CONEX are set forth in AR 746-1. These criteria allow latitude to shipping installations and maximum practical use will achieve economy and timely safe delivery of supplies.

3.2.9.3.2. Where regional agreements have been reached on more favorable freight rates, due consideration will be given to this additional benefit of CONEX use.

3.2.9.3.3. Notwithstanding the above factors, cargo transporters may be used for shipment of sensitive, critical, or high-value items (one dollar or more per net pound of weight) when benefits resulting from the saving of time or insurance against pilferage override the benefit of the initial economy.

3.2.9.3.4. CONEX will not be used for shipment of ammunition, toxics, explosives, or other dangerous articles without prior approval from command headquarters.

3.2.9.3.5. When vans are used to transport multiple supply units and containers as a RO/RO or SEAVANS' shipment, the general principles applied to CONEX in relation to packing, marking, documentation, etc., will apply.

3.2.9.4. Loading.

3.2.9.4.1. AR 55-1 prescribes basic rules to be observed in loading supplies into transporters. In addition, there are situations in which consolidation of packaged or nonpackaged supplies within larger packages for shipment within the transporters would be more economical from the standpoint of reduced handling and documentation as well as the importance of keeping certain items together. For this purpose, insert containers have been developed and are available. Details are contained in chapter 3, section XIV, of this manual and TM 10-252.

3.2.9.4.2. When it is deemed necessary to separate load segments, large fiberboard panels, barrier paper, or other suitable material may be used. Details are contained in chapter 3, section XIV, of this manual.

3.2.9.5. Movement.

3.2.9.5.1. For the land transportation segment of CONEX shipments, four types of conveyances are used—gondola railcar, rail flatcar, rail boxcar, and truck semi-trailer. In oversea commands, where circumstances so require, available equipment including 2½ ton trucks, may be used for the land transportation segment of CONEX shipments. In rail shipment, use of gondola car is preferable for the following reasons:

3.2.9.5.1.1. Little blocking or dunnaging is necessary.

3.2.9.5.1.2. Flatcars require extensive and expensive load securing.

3.2.9.5.1.3. Boxcars present a great problem in placement and removal of units.

3.2.9.5.2. Gondola. A top-handling device, as shown below is suitable for use on 20,000-pound capacity forklift trucks to simplify loading into gondola-type cars.

3.2.9.5.3. For horizontal movement of transporters within warehouse or onto a stake and platform semitrailer of flatcar, a 12,000-pound capacity electric-driven, platform-type hand pallet truck is available for use.

3.2.9.5.4. Use of rail boxcars for shipping loaded transporters will be limited in accordance with the provisions of AR 55-1 and appropriate oversea directives.

3.2.9.6. Preservation, packaging, packing, and marking requirements are contained in chapter 3, section XIV, of this manual.

3.2.9.7. Documentation.

3.2.9.7.1. Documentation instructions pertinent to oversea freight shipment will be as prescribed in AR 725-50 and DOD 4500.32-R.

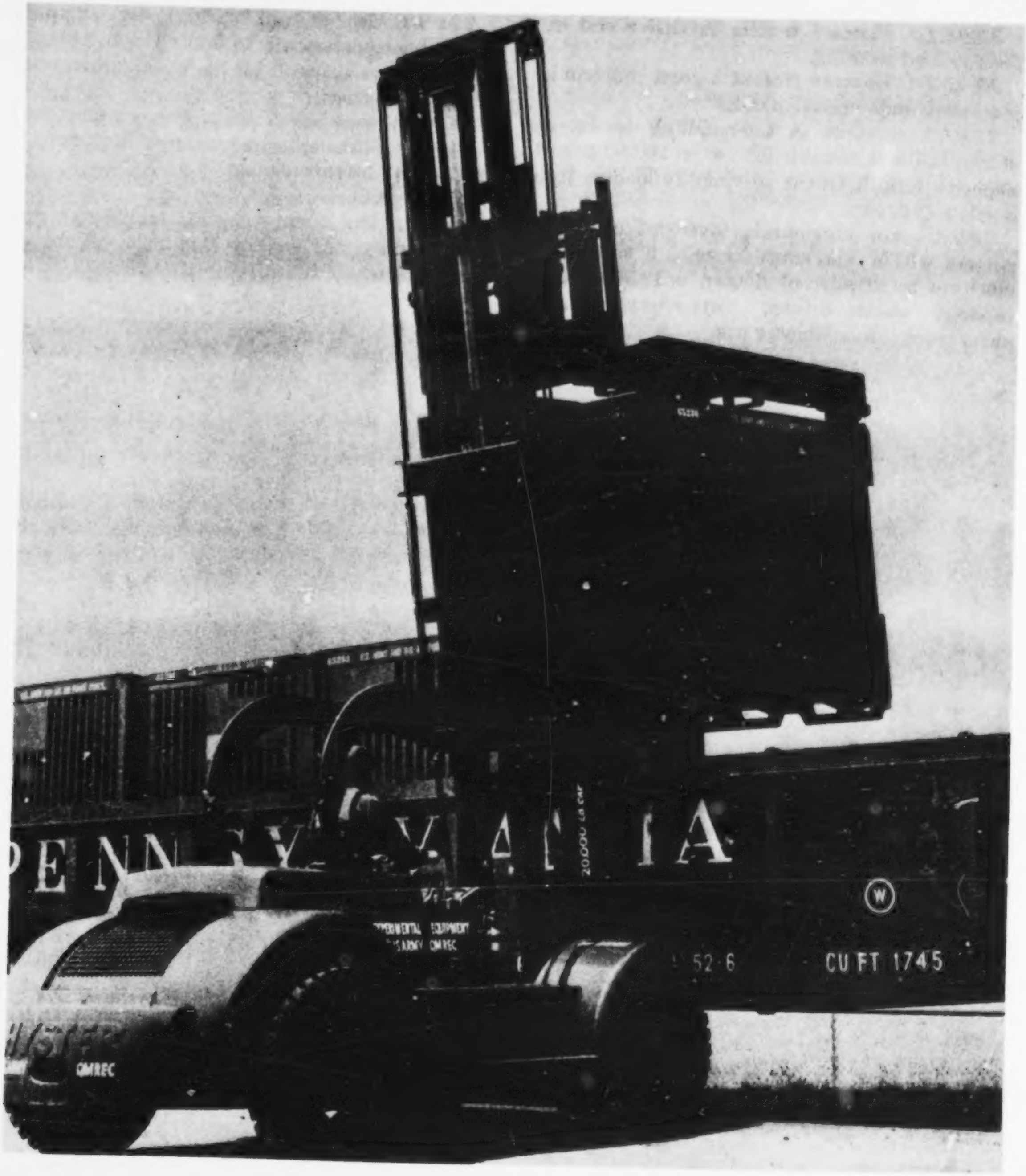


Figure 4. Handling device for use in CONEX service. Attachment fits on forks of lift truck for loading, handling or unloading CONEX containers from open top gondola cars.

3.2.9.7.2. Prior to release of CONUS-originated RO RO shipments to the outloading terminal, the shipping depot must comply with current procedures for booking the RO/RO vessel sailing.

3.2.9.8. Receipt, storage, and maintenance of CONEX transporters will be in accordance with AR 55-1 and AR 750-1.

3.2.9.9. Shipment of Empty Transporters.

Empty transporters will be shipped only upon shipping orders issued by the Joint CONEX Control Agency or appropriate oversea control activities and normally will be covered by CONUS route orders issued by the appropriate MTMTS regional office, which will also be an action addressee of the CONEX Shipping Order. Empty transporters should be shipped in gondola or flat railcars, or in open-top or stake and platform semitrailers. Route orders for rail movements may specify double-tiering of empty transporters when MTMTS determines that this method is feasible and more economical.

3.2.9.10. Control of CONEX Transporters and RO/RO Trailers. See AR 55-1, for responsibilities and actions required in the control and accounting for these nonexpendable items.

3.2.10 Reporting

3.2.10.1. A shipping depot report of supply performance will be made to the appropriate CONUS command or oversea commander. This report in CONUS will be submitted in the format and intervals prescribed by Headquarters, US Army Development and Readiness Command. Oversea installations will report as prescribed by the appropriate oversea commander.

3.2.10.2. Installations will be governed by the applicable shipping activity time periods as reflected in AR 725-50. Reports will, in turn, reflect this performance.

CHAPTER 3

STORAGE PROCEDURES

Section III. STOCK LOCATION

	Paragraph	Page
Introduction	3.3.1	33-1
Operation and control	3.3.2	33-1
Bulk storage location numbering system	3.3.3	33-3
Loose issue storage location numbering system	3.3.4	33-5
Location site forms	3.3.5	33-10
Location actions related to receipts	3.3.6	33-16
Location deletions	3.3.7	33-20
Catalog/management data changes	3.3.8	33-20
Remarking of items with a superseded stock number, unit of issue, or expiration date	3.3.9	33-20
Location changes related to rewarehousing	3.3.10	33-20
Location survey	3.3.11	33-21

3.3.1. Introduction

3.3.1.1. General. These procedures are prescribed for the design and use of stock location systems for general supplies. All forms and labels required by this manual, except forms authorized for local reproduction, are available through normal AG publications supply channels. The location numbering systems outlined in paragraphs 3.3.3 and 3.3.4 of this manual are for use by all Army activities except those units operating under AR 710-2, which will use the system described therein.

3.3.1.2. Definitions.

3.3.1.2.1. Central stock location file. A centralized file on cards or data processing equipment, with a separate record for every occupied or reserved location. The file should also contain records that identify empty loose issue locations by size of opening, to assist in prelocating materiel to a specific location.

3.3.1.2.2. Daily location transaction sampling. A random sampling of transactions affecting the central stock location file to ensure that location records are in agreement with materiel in corresponding storage locations.

3.3.1.2.3. Location survey. A physical verification, other than actual item count, between storage activity assets and recorded location data to ensure that all assets are properly recorded as to location, stock number, condition code, unit of issue, physical security/pilferage code, and shelf life code.

3.3.1.2.4. Statistical sampling location survey. A random sample survey of items from stock location records and physical locations to determine the need for a complete location survey.

3.3.1.2.5. Loose issue storage area. A centralized storage area utilizing bin, shelf, or rack type storage aids.

3.3.1.2.6. Location suspense file. A file of location change documents or a computer listing maintained in NSN sequence within date until proof of storage has been received. This file is also used as an aid in researching potential denials.

3.3.2. Operation and Control

3.3.2.1. Each storage installation will use a single centralized stock location file. (Where custodial records are maintained, the location file may be incorporated within these records.) Stock location files or data processing remote inquiry units should be conveniently located in the storage operation, preferably near the receiving area. Installations without data processing remote inquiry units may maintain a service file in the data processing activity for preparing survey listings and survey work cards, inventory count cards and control sheets, and other output which otherwise would require using the central location file. The storage activity will furnish input required to maintain this service file.

3.3.2.1.1. The central stock location file will contain, as a minimum, detailed stock location, stock number, condition code, unit of issue, physical security/pilferage code and shelf life code. Expiration date will be included if required. Stock location files for medical items with a potency period will show applicable lot numbers and manufacturer in addition to expiration date. Nomenclature may be included in location file data if essential to operations.

3.3.2.2. The stock location system will use automatic data. processing equipment when possible. Manual and manual-mechanical stock location systems will use a general purpose card containing the data specified in 3.3.2.1.1. for the central stock location file.

3.3.2.3. Multiple stock locations must be minimized and controlled to avoid misuse of storage space and to avoid additional operating costs related to stock selection, inventory, and rewarehousing. Controls will be established within local operating procedures to limit the number of stock locations per line item to the number necessary to maintain efficient operations. Special emphasis will be given to these controls in loose issue storage areas where, normally, only one location per item is allowed for each stock number (by condition code and/or shelf life, expiration date, as applicable). This can be accomplished, in part, by selecting locations which can efficiently hold the totally quantity on hand. To control the buildup of excessive records, the Department of Army (DA) objective is that the ratio of total number of storage locations to total line items stored will not be greater than 1.3 to 1. A line item is a single stock number record for a specific condition code. Stock numbers with more than one condition code will be treated as separate line items in computing ratios. Stock numbers pertaining to shelf life items, which are stored in separate locations by virtue of expiration dates, will be included as part of the ratio and, therefore, are not counted as separate line items. When the ratio is greater than 1.3 to 1, action will be taken to bring the ratio in line with the DA objective when storage space or money will be saved by such action. Storage activities will perform a semiannual review of locations to line items ratio during the first and third quarters of the fiscal year. If the 1.3 to 1 ratio is exceeded, a statistical sampling of line items with more than three locations will be performed to determine the validity of the locations or the corrective actions required. The sampling, when required, will be based only on those line items with more than three locations. To determine the sample size and lot acceptance/rejection limits, refer to MIL-STD-105 (table1-General Inspection Level II and the 25 AQL column of table II-A). For the purposes of this survey, the rejection rate applies to line items with multiple locations that require consolidation to a lesser number of recorded locations. These judgments must be made by qualified storage specialists. When the sample survey shows that rejections exceed the allowable 25 AQL rate, storage management will formulate plans to perform any rewarehousing necessary to reduce the number of multiple locations. Storage management officials are responsible for the management, control and corrective action pertaining to multiple locations. Records of semiannual ratios of total storage locations to total items stored and statistical sampling surveys (when applicable) will be maintained for review by major command representatives.

3.3.2.3.1. In bulk areas, a large block of one item may take up several adjoining locations. Only the lowest numbered location in the block should be recorded. Stock selection will be from the highest numbered location to the lowest numbered location. The intent of recording only one location for block stored items is to reduce the number of recorded locations. A block of materiel in a bulk storage area will contain materiel of only one stock number and condition code.

3.3.2.4. All loose issue locations will be identified by size so that receipts can be prelocated to a specific location that will accommodate the materiel received. This will be done by establishing a file (computer or manual, depending on capability) containing empty loose issue locations identified by size. Controls will be required to prevent duplicate recording of empty loose issue locations to the file. As the cubic needs of the item received are established, the proper location will be withdrawn from the file and assigned to the item. Controls will be established within this file to ensure that security storage area locations are correctly identified and used for storage of classified or pilferable materiel. Item activity data will be used to ensure active item storage at the most convenient point. Deleted loose issue locations will be placed in the loose issue file of empty locations. Computer-equipped activities may maintain an off-line file of empty loose issue security locations when the computer storage record capacity is inadequate, or when the number of these locations does not justify computer processing. (See para 3.3.2.8 for exceptions to location deletion.)

NOTE

See chapter 3, section XII of this manual for special controls pertaining to small arms multiple locations.

3.3.2.5. Daily changes, deletions, and additions to the location file directly affect the file accuracy. To provide a continuing accuracy control, these transactions must be randomly sampled on a daily basis. This sampling must be done by independent quality control personnel. Appendix J of AR 740-26 shows the criteria for determining sample sizes and lot acceptance or rejection. All defects uncovered by the daily sampling process must be corrected by storage personnel. Where the number of incorrect transactions (a transaction may include more than one defect but only one defect per transaction is charged) equals or exceeds the applicable rejection number, the day's file of location transactions must be returned by quality control to the storage activity. All transactions in the file (excluding those already checked by quality control personnel) must then be checked by storage personnel. The sampling process is then repeated by quality control personnel to determine the lot accuracy. This sampling and checking process will be repeated until the lot accuracy is acceptable.

NOTE

> Daily transactions affecting small arms location records will be subjected to a 100 percent quality check and will not randomly sampled.

3.3.2.5.1. Identical but separate quality checks of location transactions will be accomplished by quality control personnel after major rewarehousing projects and after processing monthly catalog data change notices related to the Army Master Data File.

3.3.2.5.2. The quality checks discussed above include data verification at both the location site and the location file. To be totally effective, these quality checks must be used by management to assess and correct causes of errors.

3.3.2.6. Centralized location control will be maintained over all intermediate movements to and from maintenance and packaging areas.

3.3.2.7. Prompt submission of location addition/deletion actions is essential to effective stock location control. Location deletion actions will be initiated when the selection of an item for issue exhausts all the stock in a recorded location, when the total quantity in a recorded location is moved to another location, and when no stock is found in the location during a location survey. When the stock in a loose issue location is depleted and a bulk location for the item exists, a replenishment action is normally initiated and the loose issue location would not be deleted. When no bulk location exists, the loose issue location is deleted. (See exception covered in 3.3.2.8. below.)

3.3.2.8. When authorized by the CONUS or oversea commander, permanent locations may be reserved (even though stock is exhausted) when the location is in a loose issue area and is used to store a fast-moving item and prompt replenishment is expected, or when the location has been designed to hold odd-shaped items such as tailpipes, missiles, or tubing. A temporary location in a preservation and packaging area may be reserved when the item is being processed in increments (such as materiel from maintenance rebuild) and the total quantity of the item has not been received in the preservation and packaging area. Empty locations that are not to be deleted will be controlled by identification on the location file to prevent a charge against the accuracy of the stock location system when a location survey is conducted.

3.3.2.9. Procedures will be established to:

3.3.2.9.1. Comply with security guidance specified in chapter 3, section XV of this manual.

3.3.2.9.2. Comply with special small arms controls specified in chapter 3, section XII of this manual.

3.3.2.9.3. Ensure that materiel is segregated by condition code and/or expiration date when applicable.

3.3.2.9.4. Ensure that storage practices are consistent with FIFO objectives.

3.3.3. Bulk Storage Location Numbering System

3.3.3.1. The 53-inch grid system established in DOD 4145.19-R-1 will be used in bulk storage areas except as authorized by paragraph 3.3.4.2 herein. Classified or pilferable items must be stored in secure locations (see chapter 3, section XV). Bulk storage locations will be identified by nine characters as shown in figure 1.

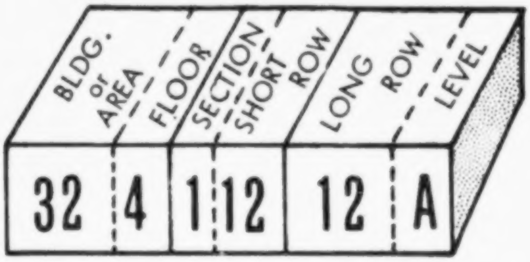


Figure 1. Bulk storage location interpretation chart.

3.3.3.1.1. The first and second characters designate building or area number. *These numbers may or may not be the same as those shown on the post engineer drawings.*

3.3.3.1.2. The third character designates the floor of the building. Begin with "1" for the lowest floor and continue in numerical sequence until all floors have been numbered. For single story structures and open areas, the assigned number will be "1". Where conditions dictate and multistory buildings are not an overriding factor, the third character may be used to expand building, area or section identification.

3.3.3.1.3. The fourth character represents the section number. Warehouse sections or areas between firewalls or other logical areas for subdivision will be numbered from left to right on the planograph beginning with "1". Continue in numerical sequence until all sections on a floor have been numbered. When section indication is not required, enter a "0". Though it is uncommon for a storage building to have more than nine sections, alpha characters may be used if this situation exists. Positioning of planographs for all storage areas at an installation should be consistent so that section numbering will always begin from the same point.

3.3.3.1.4. The fifth and sixth characters indicate short rows within sections. The short rows run the width of the storage structure or storage area. Number these rows (which are made up of 52-inch grids) on the planograph from left to right beginning with "01". Continue in numerical sequence until all short rows within a section have been numbered. Numbering sequence begins again with "01" for each section. Short rows falling within aisles are also assigned numbers on the bulk storage planograph (fig. 2).

3.3.3.1.5. The seventh and eighth characters represent long rows. The long rows run the length of the storage structure or outside storage area, and continue for the length of the structure or area without change in numbering. Number these rows (which are also made up of 52-inch grids) on the planograph from bottom to top beginning with "01". Continue in numerical sequence until all long rows have been numbered. Long rows falling within aisles are also assigned numbers on the bulk storage planograph (fig. 2).

NOTE

Assigning numbers to short and long rows falling within aisles allows change in aisle positioning or width without affecting the numbering of other locations in the area.

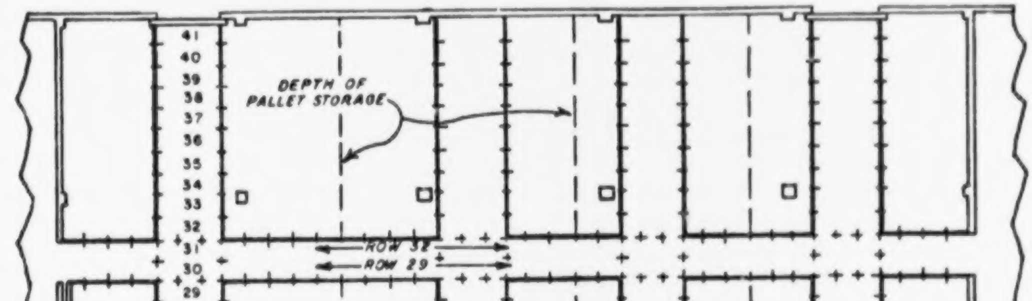

DEPTH OF PALLET STORAGE
ROW 32
ROW 29
ROW NUMBERS RESERVED FOR REARRANGEMENT OF PLAN
41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 09 08 07 06 05 04 03 02 01
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

Figure 2. Example medium lot bulk storage layout.

3.3.3.1.6. The ninth character designates level. Since level indicators are not required for bulk quantities of materiel in storage, an "A" is used to maintain uniform location construction and interpretation. (Where single pallet load quantities of materiel are stored in a column of box pallets, pallet support sets, or storage racks within a bulk storage area, each level of these storage aids will be identified by an alpha character beginning with "A" for the bottom level and continuing in sequence for each level. This pinpoints the location of the different stock numbers in such a column.)

3.3.3.2. The location markings in bulk storage areas will be applied as follows:

3.3.3.2.1. As a minimum, row numbers in covered bulk storage areas will be placed on the floor at intersecting aisle corners and at every fifth long and short row. Numbers will be located on the aisle perimeter line to minimize exposure to traffic. Where placement on the floor is not practical because of floor surface, row markings will be displayed on posts or other suitable, easily visible structural members. Location markings should face the operating aisles. Row number markings should be large enough to read easily.

3.3.3.2.2. Paint for aisle and location markings will be applied as stated in AR 385-30 and will conform to Federal Standard No. 595 and Federal Specification TT-P-115. Pressure-sensitive tape or decals that provide acceptable adhesion and wearability may be used in lieu of painting.

3.3.3.2.3. In open storage areas, location identification markings may be displayed on permanent weatherproof placards or signs at strategic points or may be applied on suitable surface areas in the same manner as in the warehouses. The quantity and detail of these marking displays will be determined by the extent of open storage area and by the type, variety, and quantity of materiel stored.

3.3.3.3. Figure 2 shows the planograph row numbering pattern for an example bulk storage layout.

3.3.4. Loose Issue Storage Location Numbering System

3.3.4.1. Loose issue locations will be identified by nine characters as shown in figure 3.

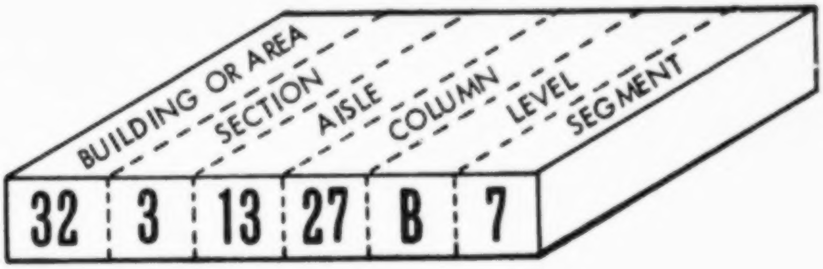


Figure 3. Loose issue location interpretation chart.

3.3.4.1.1. The first and second characters designate building or area number. *These numbers may or may not be the same as those indicated on post engineer drawings.*

3.3.4.1.2. The third character represents the section number. Warehouse sections or areas between firewalls or other logical areas for subdivision will be numbered from left to right on the planograph beginning with "1". Continue in numerical sequence until all sections have been numbered. The section number character may also be used to designate mezzanine-type storage areas. Though it is uncommon for a storage building to have more than nine sections, alpha characters may be used if this situation exists.

3.3.4.1.3. The fourth and fifth characters indicate the aisle between rows of storage aids. Where storage aids run parallel to the ends of the building, aisle numbers begin with "01" at the left of the planograph for each section and continue in numerical sequence until all aisles within the section have been numbered (figs. 4 and 5). Where storage aids run parallel to the sides of the building, aisle numbers begin with "01" at the bottom of the planograph and continue in numerical sequence until all aisles within the section have been numbered (fig. 6).

3.3.4.1.4. The sixth and seventh characters represent the storage aid column facing the aisle. Where storage aids run parallel to the ends of the building, column numbering begins at the bottom of planograph for each warehouse section (figs. 4 and 5). Where storage aids run paralled to the sides of the building, column numbering begins at the left side of the planograph for each section (fig. 6). Column numbering will alternate with odd numbers on the left and even numbers on the right side of the aisles. Characters will normally be numeric, but where the need for column numbers exceeds 98, column numbering will use an alphanumeric combination. Column numbering will then begin with "A1" and extend through ::A8," and go to "B1" and extend through "B8," and so on (fig. 5).

3.3.4.1.5. The eighth character represents the opening level in the storage aid column. This is an alpha character and begins with "A" at the bottom of the storage aid column and continues in alphabetical sequence until all levels are identified (fig. 7).

3.3.4.1.6. The ninth character represents a specific storage segment within the storage aid column level. This is a numeric character. Segments within a level will be numbered from left to right (fig. 7). When the number of segments exceeds 9, alpha characters may be used.

3.3.4.2. The location numbering system shown in 3.3.4.1 above may also be used in a storage section comprised of all rack, box pallet, or pallet support set storage aids.

NOTE

Where automatic storage and retrieval facilities are installed, the location numbering system must be designed to ensure optimum compatibility with the location numbering systems detailed in this section.

3.3.4.3. The numbering sequence of columns facing each aisle provides an advantage in stock selection patterns. The sorting sequence of the location field in the stock selection documents is reversed as the aisle number changes. For the first aisle to be entered, the machine sort would be in ascending order and then reversed (in descending order) for the next aisle to be entered. This will permit stock selection in a serpentine pattern and will allow aisles with no selection documents to be bypassed.

3.3.4.4. Aisle numbers will be marked on the floor at aisle entrances. Column numbers may be placed on the floor in the front and center of each storage aid column or positioned at the top center of each storage aid column. Level indicators will be shown immediately below and in the center of each column level. The segment indicator will appear on each compartment within the column level. The range of column numbers along an aisle or portion of an aisle may be shown on the ends of the storage aids. The section number need appear only periodically on these storage aid ends to assist in identifying the storage area section. Stencils or decals may be used to identify columns, levels, or segments.

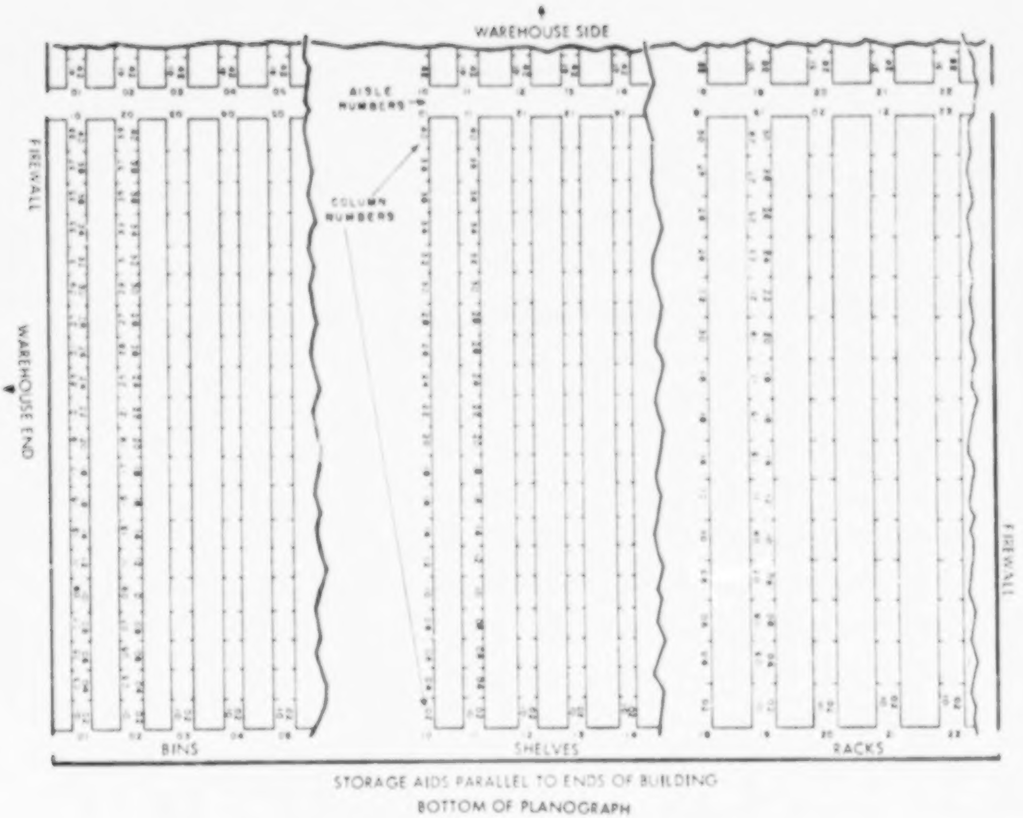
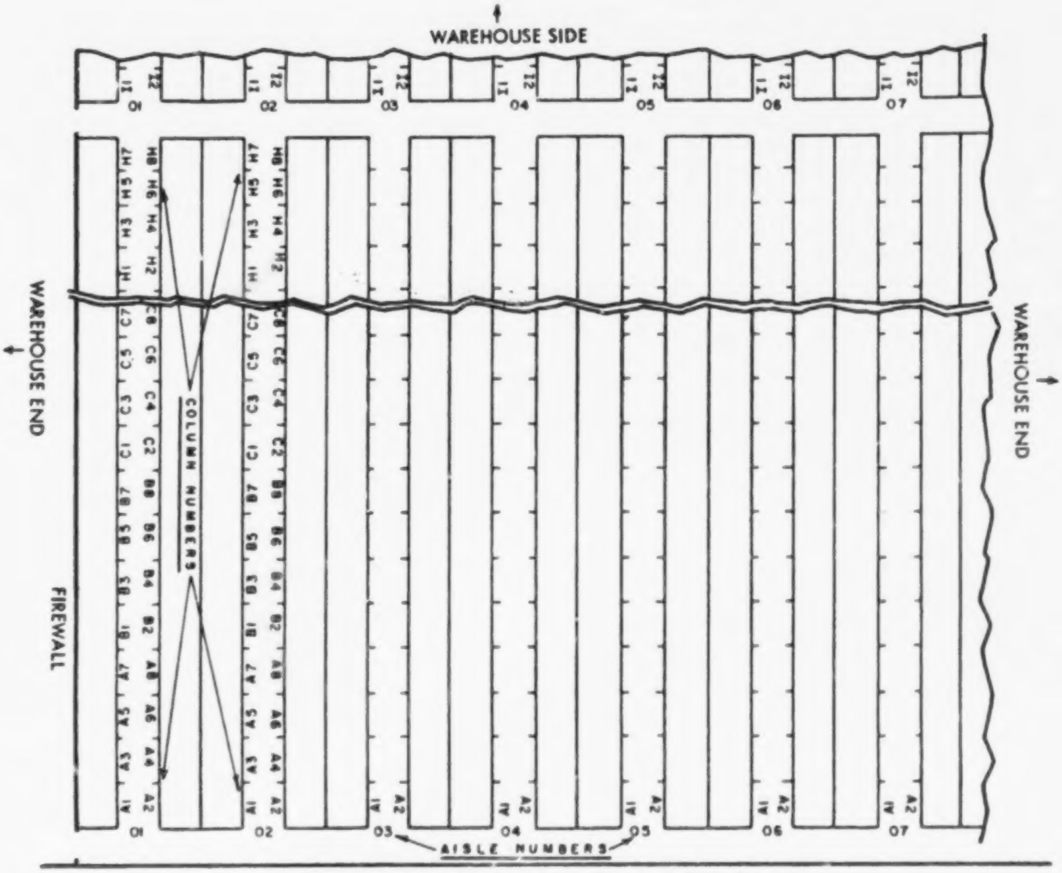

WAREHOUSE SIDE
AISLE NUMBERS
COLUMN NUMBERS
FIREWALL
WAREHOUSE END
FIREWALL
BINS
SHELVES
RACKS
STORAGE AIDS PARALLEL TO ENDS OF BUILDING
BOTTOM OF PLANOGRAPH

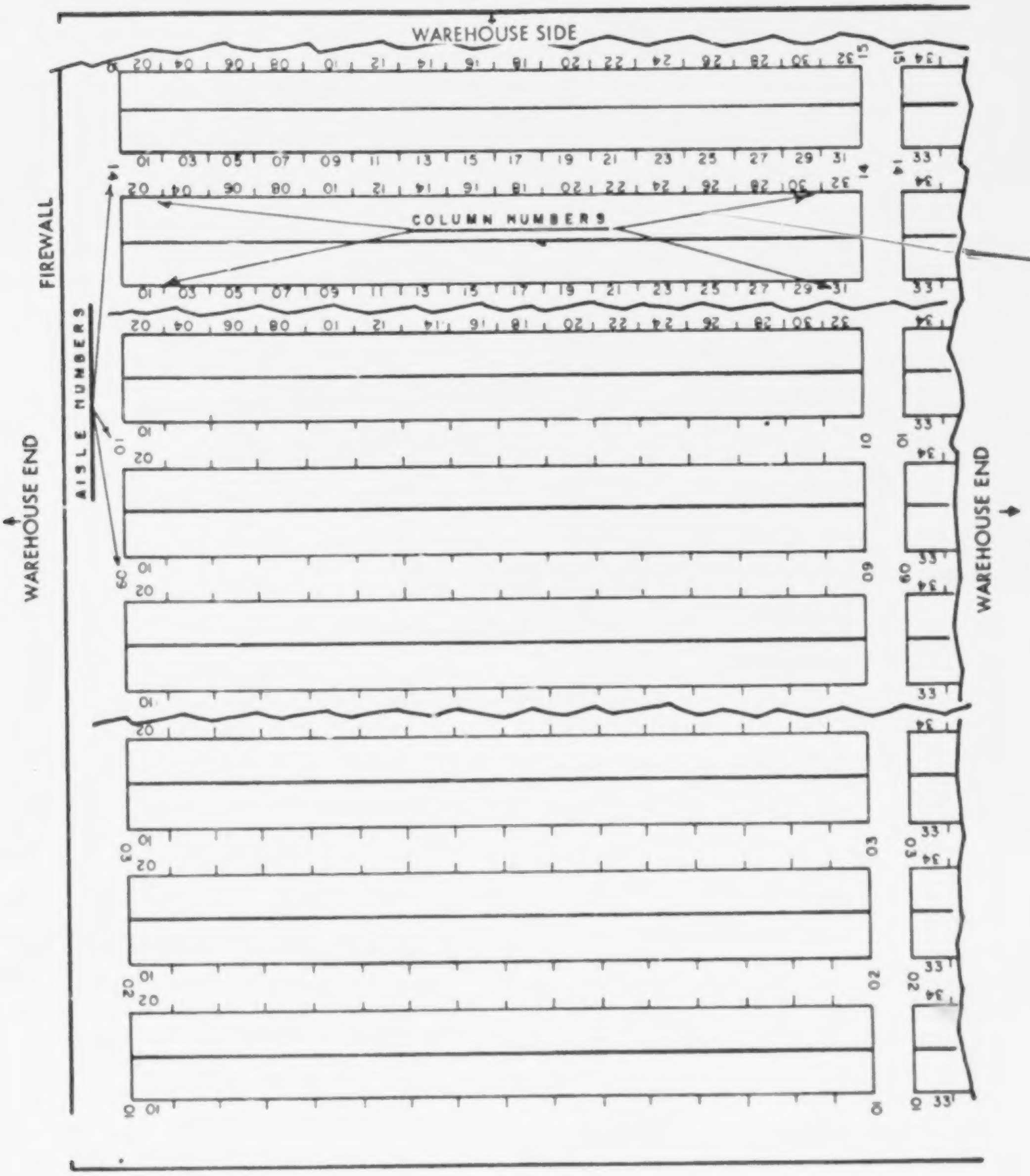
Figure 4. Loose issue location numbering pattern.


WAREHOUSE SIDE
WAREHOUSE END
WAREHOUSE END
FIREWALL
COLUMN NUMBERS
AISLE NUMBERS
01
02
03
04
05
06
07
I1
I2
A1
A2
A3
A4
A5
A6
A7
A8
B1
B2
B3
B4
B5
B6
B7
B8
C1
C2
C3
C4
C5
C6
C7
C8
H1
H2
H3
H4
H5
H6
H7
H8

STORAGE AIDS PARALLEL TO ENDS OF BUILDING

BOTTOM OF PLANOGRAPH

Figure 5. Loose issue location numbering pattern.


WAREHOUSE SIDE
FIREWALL
WAREHOUSE END
WAREHOUSE END
COLUMN NUMBERS
AISLE NUMBERS

STORAGE AIDS PARALLEL TO SIDES OF BUILDING

BOTTOM OF PLANOGRAPH

Figure 6. Loose issue location numbering pattern.

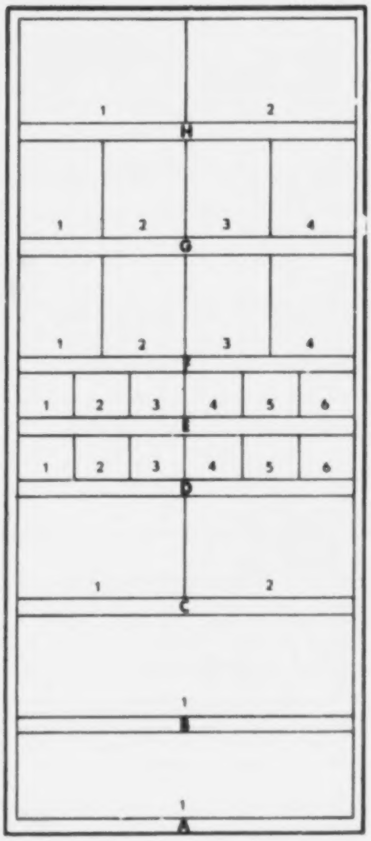


Figure 7. Example bin storage aid column.

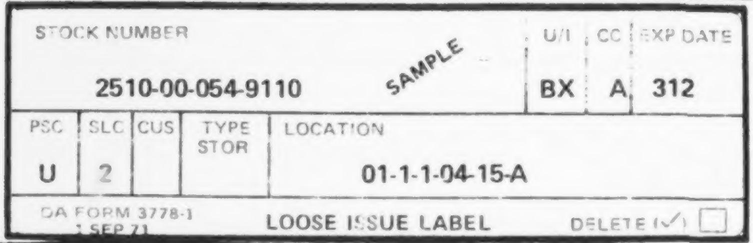
3.3.5. Location Site Forms

3.3.5.1. The following forms will be used at the storage location to aid in identification or to alert the stock selector of possible problem areas.

3.3.5.1.1. Loose Issue Label (DA Forms 3778-1 and 3778). Each occupied or reserved location in designated loose issue areas will be identified with a Loose Issue Label. Activities may use either DA Form 3778-1 or 3778. The labels themselves are identical. They differ in the way that they are mounted on the backing. DA Form 3778-1 is a continuous construction with the labels mounted on the left side of the sheet. DA Form 3778 is a continuous construction with the labels mounted two up, side by side. Where Loose Issue Lables are mechanically prepared, each occupied and reserved bulk and rack location will also have a Loose Issue Label. This label will show (as a minimum) location, stock number, condition code, and unit of issue (fig. 8). Ownership code will be shown when owner segregated storage is required. In bulk or rack areas, attach the Loose Issue Label in the remarks block of the Location Placard (DA Form 3779). In bin or shelf areaf, attach the label to the bin or shelf.

3.3.5.1.2. Location Placard (DA Form 3779). A Location Placard will be conspicuously placed at each bulk or rack location. The choice of method used to display the placard will be at the discretion of the storage manager (e.g., fastened to the pallet containing materiel or fastened to a container on the pallet). Placards with a Loose Issue Label attached, will show, as a minimum, stock number and location. Placards without a Loose Issue Label require the same information required on the Loose Issue Label (see para 3.3.5.1). Local standing operating procedures should establish criteria for completion of other placard entries. Display additional information in other specific blocks or in the remarks block only when essential to materiel control. The Loose Issue Label will be attached in the remarks block (fig. 9).

3.3.5.1.3. Pallet Count Placard (DA Form 3780). This placard serves as an inventory aid to reduce the counting requirements in bulk storage areas (fig. 10).



STOCK NUMBER 2510-00-054-9110 SAMPLE	U/I BX	CC A	EXP DATE 312

PSC U	SLC 2	CUS	TYPE STOR	LOCATION 01-1-1-04-15-A

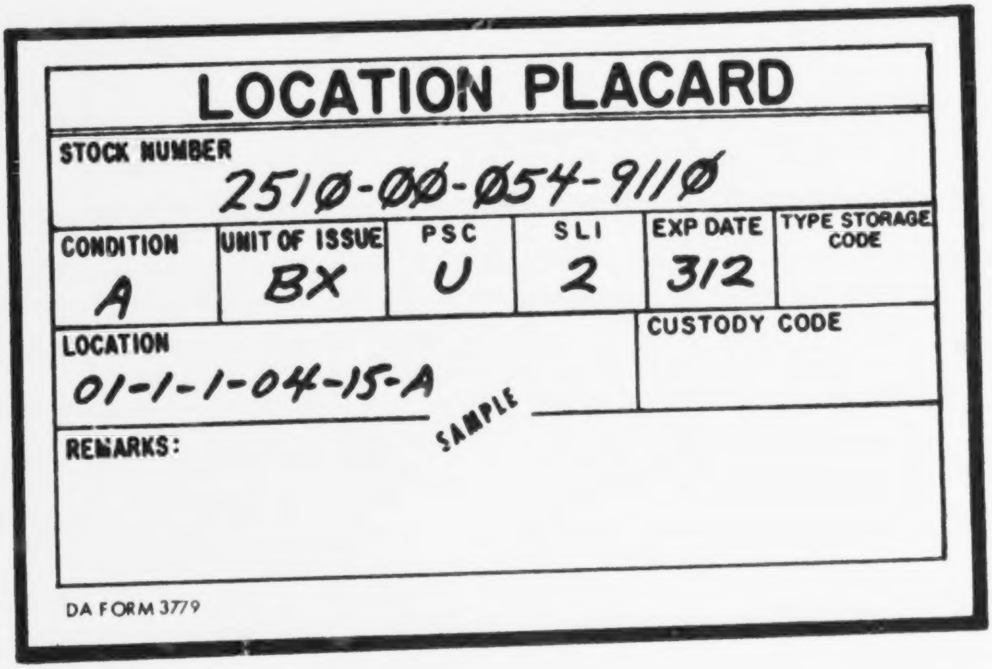
DA FORM 3778-1
1 SEP 71

LOOSE ISSUE LABEL

DELETE (✓) ☐

BLOCK TITLE	EXPLANATION
STOCK NUMBER	Stock Number of the item
U/I	Two character abbreviation of the unit of issue (AR 708-1, chapter 7).
CC	Condition code (AR 725-50).
EXP DATE	Expiration date used in conjunction with shelf life code, if applicable.
PSC	Physical security/pilferage code (AR 708-1, chapter 7), if applicable.
SLC	One character shelf life code (AR 708-1, chapter 7)
CUS	Code indicating ownership, if required.
TYPE STOR	Type storage code, if applicable. (Locally developed and/or AR 708-1.)
LOCATION	Assigned storage location.

Figure 8. Example Loose Issue Label.



LOCATION PLACARD

STOCK NUMBER 2510-00-054-9110					
CONDITION A	UNIT OF ISSUE BX	PSC U	SLI 2	EXP DATE 312	TYPE STORAGE CODE
LOCATION 01-1-1-04-15-A				CUSTODY CODE	
REMARKS:					

SAMPLE

DA FORM 3779

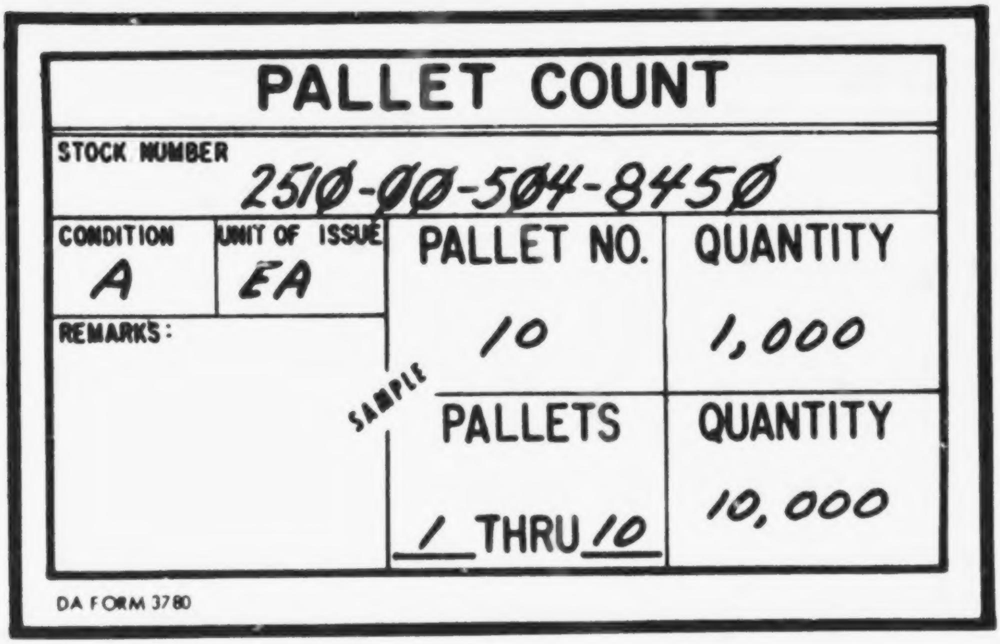
Figure 9. Location Placard (DA Form 3779).

3.3.5.1.3.1. Nonuniform pallet loads. A Pallet Count Placard will be affixed to the left corner (when facing pallet) of each pallet in a row where nonuniform pallet loads are stored. Count will be cumulative by pallet from bottom to top of the stack and from back to front of the row. When a partial quantity is removed from the top foremost pallet, the placard for that pallet will be destroyed (do not replace). Any quantity remaining on this pallet will require an actual count during inventory actions. However, the count for the balance of the stock in the row will be as shown on the placard containing the remaining cumulative total for the row.

3.3.5.1.3.2. Uniform pallet loads. When local storage managers determine that using pallet count placards on rows where uniform pallet loads are stored will aid in counting during inventory, the placard will be used as fopllows:

3.3.5.1.3.2.1 A Pallet Count Placard will be placed on each row where uniform uniform pallet loads are stored. The Pallet Count Placard will reflect total number of pallets and total item quantity in the row. The placard will be affixed to the left corner (when facing pallet) of a pallet at the front of the row. The pallet load chosen for the placard should allow the placard to be easily read from ground level. Pallet count placards will not protrude above or to the side of the materiel. The placards will be destroyed when a pallet load or portion of a pallet load is removed from a row. The row will then require an actual count during inventory actions.

3.3.5.1.4. Check Unit of Issue Notice (DA Form 3781). This notice will be used only on items where incorrect shipments could likely result if the unit of issue peculiarity were not brought to the attention of the stock selector (e.g., a unit of issue "EA" consisting of five boxes numbered 1 through 5) (fig. 11).



PALLET COUNT

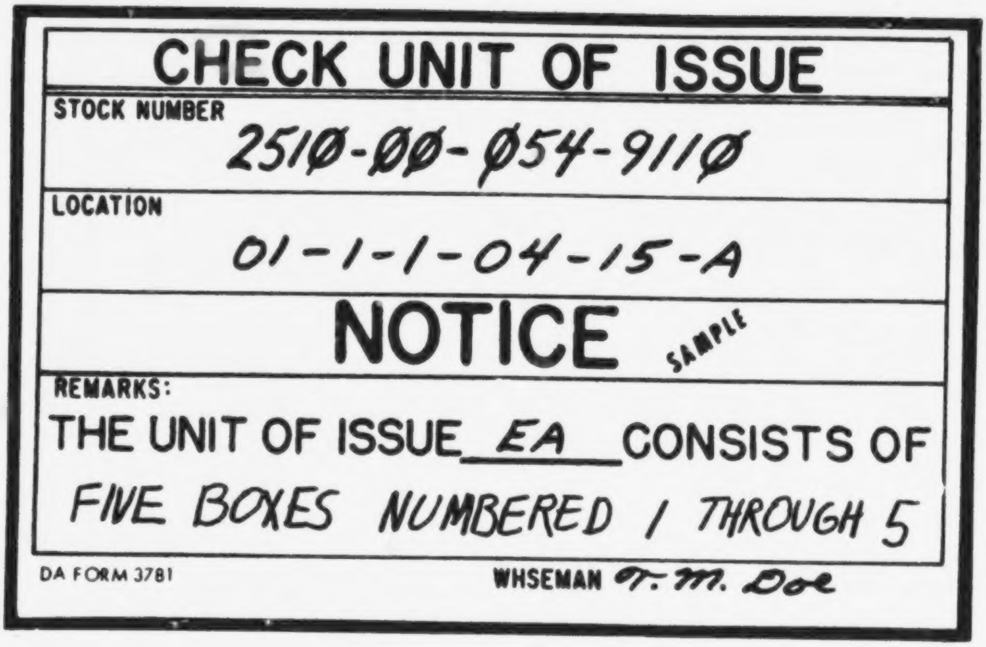
STOCK NUMBER 2510-00-504-8450			
CONDITION A	UNIT OF ISSUE EA	PALLET NO. 10	QUANTITY 1,000
REMARKS:		PALLETS 1 THRU 10	QUANTITY 10,000

SAMPLE

DA FORM 3780

Figure 10. How to prepare DA Form 3780 (Pallet Count Placard).

Field Legend	Explanation
Stock Number	Enter NSN or other stock number of item.
Condition	Enter one-character, alphabetic condition code.
Unit of Issue	Enter standard two-digit, alphabetic abbreviations for U/I as indicated in record for an item.
Pallet No.	Enter number of pallet to which pallet card is to be affixed. Number pallets consecutively in each row, or stack, beginning with floor pallet at rear or row, or stack, and number consecutively in the order pallets are stored.
Quantity	Enter total quantity of materiel on pallet.
Pallets_____ thru_____	Enter 1 through_____, number of pallet to which card is affixed.
Quantity	Enter total quantity of materiel on all pallets in stack or row.
Remarks	Enter any remarks of an unusual nature.



CHECK UNIT OF ISSUE

STOCK NUMBER 2510-00-054-9110

LOCATION 01-1-1-04-15-A

NOTICE SAMPLE

REMARKS:

THE UNIT OF ISSUE EA CONSISTS OF FIVE BOXES NUMBERED 1 THROUGH 5

DA FORM 3781

WHSEMAN T. M. Doe

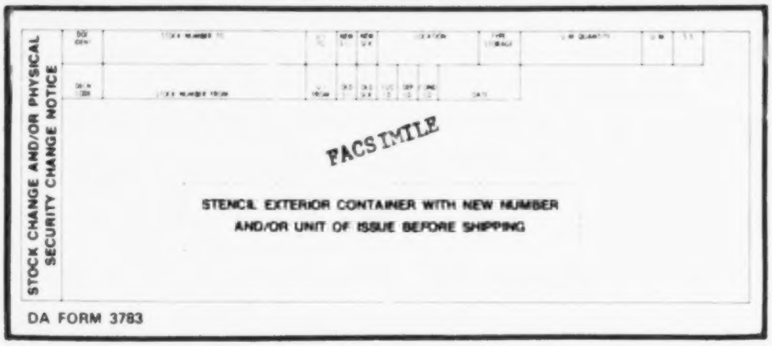
Figure 11. Check Unit of Issue Notice.

3.3.5.1.5. Stock Change and/or Physical Security Change Notice (DA Form 3783). This form will be used to identify materiel with stock number/unit of issue and other catalog data changes. Use of this form eliminates any immediate need to break down a stack or to otherwise move materiel to change these container markings. It will be affixed at the location (fig. 12). (See paragraph 3.3.8 for further explanation of form usage.)

3.3.5.1.6. Open Box Lable (DA Label 141). All open containers in storage areas other than designated loose issue areas will have an Open Box Label attached to them. The label will also be used in loose issue areas where the container could mistakenly be counted as a full container during inventory or be issued as a full container. This situation is likely to occur in loose issue rack areas where more than one container of an item is stocked. Use of the label in all rack areas also facilitates inventory by indicating to the counter the containers that require counting of the contents. In no case should there be more than one open box per item in a loose issue or bulk location. Open containers will have the lid closed, but not sealed, to keep out extraneous matter. When a requisition requires a quantity greater than that available in a designated, centralized loose issue area (bin, shelf, or rack) or a quantity in excess of an even case lot in bulk storage, the total stock issue can be accomplished most economically by opening a container in the bulk storage area. The residue in the container should then be forwarded to the loose issue area if it can be accommodated. If the loose issue location will not accommodate the residue, the open box label will be applied to the container. The quantity therein will be used for similar type stock issues or loose issue replenishment actions.

3.3.5.1.7. Suspended Notice (DA Form 3782). The Suspended Notice will be used when stock has been suspended from issue for any reason. Stock number, condition code, and the date of suspension will be shown in the appropriate blocks. The reason for the suspension will be shown in the remarks section (fig. 13).

Figure 12. Stock Change and/or Physical Security Change Notice (DA Form 3783)



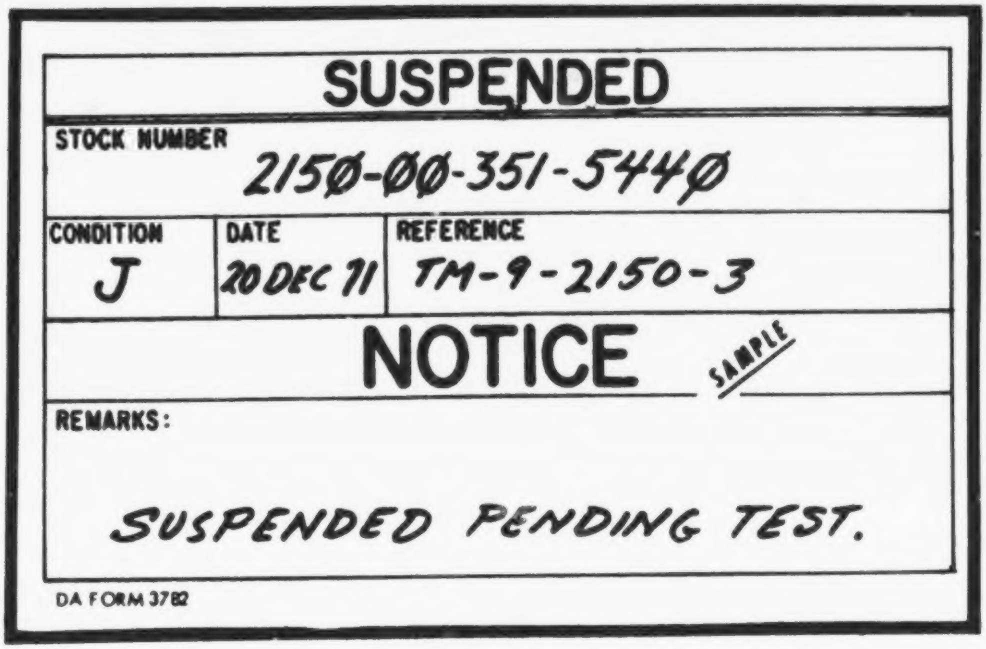
STOCK CHANGE AND/OR PHYSICAL SECURITY CHANGE NOTICE

FACSIMILE

STENCIL EXTERIOR CONTAINER WITH NEW NUMBER AND/OR UNIT OF ISSUE BEFORE SHIPPING

DA FORM 3783

BLOCK	DESCRIPTION	SOURCE
DOC INDENT	Document identifier code, if applicable	Locally developed
DECN CODE	Decision code, if applicable	**Locally developed**
STOCK NUMBER TO	New stock number, when applicable	Self-explanatory
STOCK NUMBER FROM	Old stock number, when applicable	Self-explanatory
U/I TO	Two character abbreviations for new unit of issue, when applicable	AR 708-1
U/I FROM	Two character abbreviations for old unit of issue, when applicable	AR 708-1
NEW SEC	New physical security/pilferage code, when applicable	AR 708-1
OLD SEC	Old physical security/pilferage code, when applicable	AR 708-1
NEW SCIC	New special control item code, when applicable	AR 708-1
OLD SCIC	Old special control item code, when applicable	AR 708-1
NEW SLC	**New shelf-life code**	**AR 708-1**
OLD SLC	**Old shelf-life code**	**AR 708-1**
LOCATION	Established location for the item	Location records
CUS CD	Locally developed code identifying ownership of the item, when necessary	
DEP CD	Depot code identifying parent/satellite relationship where common records are kept	Locally developed
COND CD	One character condition code	AR 725-50/location records
DATE	Self-explanatory	
TYPE STORAGE	Code identifying type of storage space	Locally developed
U/M QUANTITY	Number of units of measure in the unit of issue	Self-explanatory
U/M	Two character abbreviations of the unit of measure	AR 708-1
S/S	Code identifying items that are stocked in the self-service supply center	Locally developed



SUSPENDED

STOCK NUMBER 2150-00-351-5440

CONDITION J	**DATE** 20 DEC 71	**REFERENCE** TM-9-2150-3

NOTICE SAMPLE

REMARKS:

SUSPENDED PENDING TEST.

DA FORM 3782

Figure 13. Example Suspended Notice.

3.3.5.1.8. Susperseded Label (DA Label 142). This label will be used to identify containers where the interior packages have a superseded stock number, unit of issue, or expiration date.

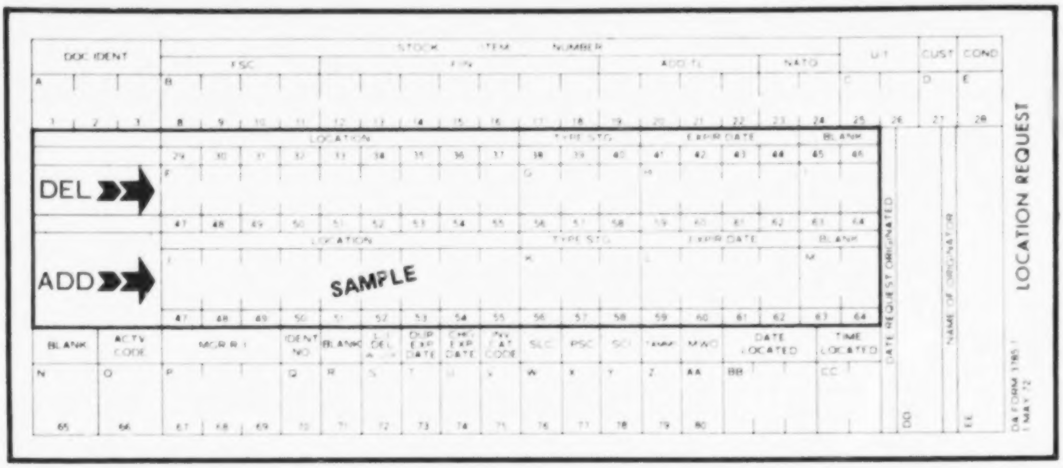
3.3.5.1.9. Location Request (DA Form 3785-1 and DA Form 3785). These forms are used as location add/delete/change documents, as materiel movement documents, and for a manual location suspense file. DA Form 3785-1 is the preferred document. Activities now using DA form 3785 may continue to do so at the option of the activity commander. Instructions for use of DA Form 3785-1 are given in fig. 14. Entries and data sources are the same for data element entries on both forms; however, the arrangement of blocks is different.

3.3.5.2. Protection of location site forms in outside storage. When used at outside storage sites, location forms and placards must be protected from damage from water, wind, etc. Accepted methods of providing this protection include placing the placard or form in a clear waterproof envelope or pouch; laminating in plastic, or covering with transparent, waterproof material. The data markings may also be applied to a sign made of wood, plastic, metal, or other durable material. The method used will be based on the local weather conditions, the type and quantity of materiel stored, and the length of time it is to remain in storage, and is left to the discretion of the local storage manager.

3.3.6. Location Actions Related to Receipts

3.3.6.1. Materiel receipt actions will be processed through the location control activity. Receipts for which there is no recorded location will be prelocated, wherever possible, to a premanent location. If this cannot be done, stock will be prelocated (and recorded) in a temporary location, i.e., building or area. (Sensitive and pilferable items will be given necessary protection while being held in a temporary storage location.) Materiel should be placed in the permanent storage location within one working day after receipt processing has been completed and the materiel has been released to the warehousing activity. To aid in minimizing materiel release denial actions, a location suspense file will be maintained for materiel for which proof of storage has not been received from the warehousing activity. Followup will be made when proof of storage has not been received withint two days from the date of the location request. When potential denials occur, the location suspense file will be checked to determine if a receipt has not yet been stored. This check will be made prior to sending a denial to the accountable activity.

3.3.6.2. To avoid more than one trip to a location, loose issue labels and location placards, when required, should be prepared at time of materiel receipt and accompany materiel to the storage location.



DOC IDENT | STOCK ITEM NUMBER: FSC, FIIN, ADD'TL, NATO | U/I | CUST | COND

DEL: LOCATION | TYPE STG | EXPIR DATE | BLANK

ADD: LOCATION | TYPE STG | EXPIR DATE | BLANK

SAMPLE

BLANK | ACTV CODE | MGR RI | IDENT NO | BLANK | L/I DEL | DUP EXP DATE | CHG EXP DATE | INV CAT CODE | SLC | PSC | SCI | TAMMS | MWO | DATE LOCATED | TIME LOCATED

DATE REQUEST ORIGINATED

NAME OF ORIGINATOR

LOCATION REQUEST

DA FORM 3785-1
1 MAY 72

Figure 14. How to prepare DA Form 3785-1 (Location Request).

L-Entries by location activity
W-Entries by warehousing personnel

Field Legend	Block	Explanation	Data Source or Applicable Reference	Add	Delete	Change
Document Identifier Code (DIC)	A	Enter Document Identifier Code (DIC) where applicable	Locally developed	L	L	L
Stock item number	B	Enter the stock number of the item	Item record, location placard, loose issue label, container marking, receipt document	L/W	W	W
Unit of issue	C	Enter standard unit of issue abbreviation	AR 708-17, item record, location placard, loose issue label container marking, receipt document	L/W		
Custody Code	D	Enter a code to indicate mission (wholesale), or depot property stock or other special identity, if applicable	Locally developed. Available at time of location request from item record, location placard, loose issue label, receipt document	L/W	W	W
Condition code	E	Enter appropriate code	AR 725-50, item record, location placard, loose issue label, receipt or inspection document	L/W	W	W
Location	F	Enter location to be deleted	Location site		W	W
Type storage code	G	Enter a code to identify type of storage	Locally developed. Available at time of location request based on location site data, location placard, loose issue label			W

Figure 14. (continued)

Figure 14. How to prepare DA Form 3785-1 (Location Request).

L-Entries by location activity
W-Entries by warehousing personnel

Field Legend	Block	Explanation	Data Source or Applicable Reference	Add	Delete	Change
Expiration date	H	If required under location controls, enter expiration data associated with location to be deleted (last two digits of calendar year and two digit month	Location placard, loose issue label, container marking, item record		W	W
Blank	I	Leave blank or develop local use as needed				
Location	J	Enter location to be added	Location site	L/W		W
Type storage code	K	Enter a code to identify type of storage	Locally developed. Available at time of location request based on location site data, location placard, loose isue label			W
Expiration date	L	Enter expiration date associated with location to be added (last two digits of calendar year and two digit month) if applicable	Location placard, loose issue label, container marking, item record	L/W		W
Blank	M	Leave blank or develop local use as needed				
Blank	N	Leave blank or develop local use as needed				
Location activity code	O	Where item demand data is available, block may indicate activity	Locally developed. Based on demand data accumulation and availability	L/W		
Manager routing identifer code	P	Enter routing identifier of item manager, if applicable	Storage activity master record, microfilm files, receipt document	L		
Identification number code	Q	Enter appropriate code to identify type of stock number, if applicable	AR 708-1	L		
Blank	R	Leave blank or develop local use as needed				
Loose issue location deletion with bulk location on record	S	For computer maintained location records where location controls normally prevent deletion of a loose issue location while a bulk location exists for the same item. Enter a code (e.g., "I") to permit action.	Locally developed		L	L
Duplicate expiration date	T	For computer maintained location records where assignment of a similar expiration date to that already on record is desired. Enter a code (e.g., "I") to permit action.	Locally developed	L		
Change expiration date	U	For computer maintained location records where change to a recorded expiration date is desired. Enter a code (e.g., "I") to permit action.	Locally developed			L/W

Figure 14. (Continued)

Figure 14. How to prepare DA Form 3745-1 (Location Request).

L-Entries by location activity
W-Entries by warehousing personnel

Field Legend	Block	Explanation	Data Source or Applicable Reference	Add	Delete	Change
Inventory category code	V	Enter appropriate code when adding a new record to a manually maintained location file	Army Master Data File broadcasts. AR 708-1	L		
Shelf life code	W	Enter appropriate code when adding a new record to a manually maintained location file	Army Master Data File broadcasts. AR 700-89	L		
Physical security classification	X	Enter appropriate physical security/pilferage code when adding a new record to a manually maintained location file	Army Master Data File broadcasts. AR 708-1	L		
Special control item code	Y	Enter appropriate code when adding a new record to a manually maintained location file	Army Master Data File broadcasts. AR 708-1	L		
The Army Maintenance Management System	Z	When TAMMS froms are required, enter an indicator in location request when adding a new record to location file (e.g., "T"). (May not be required at computer equipped installations)	TM 38-750	L		
Modification work order indicator	AA	When item modification is required, enter an indicator in location request when adding a new record to location file (e.g., "M"). (May not be required at computer equipped installations)	Modification work order control file (TM 38-750-1)	L		
Date located	BB	Enter date materiel place in location	Enter Julian date	W		
Time located	CC	Enter a two position hour code (e.g., 01 through 24).	Locally developed	W		
Date request originated	DD	Enter day, month, year location request was originated	Self-explanatory	W	W	W
Name of originator	EE	Signature of originator	Self-explanatory	W	W	W

3.3.6.3. Receiving activities, other than computer equipped installations with remote inquiry units, will use the DA Form 3785-1 (Location Request) as a materiel movement document and location suspense file input. Computer equipped installations with remote inquiry units may use materiel movement forms prepared by the remote unit in the format designated by the appropriate CONUS or oversea commander.

3.3.6.4. Warehousing activities will, upon receipt of materiel, take the following actions:

3.3.6.4.1. Verify item identification and physical security classification with data on the materiel movement document.

3.3.6.4.2. Affix proper location labels or placards.

3.3.6.4.3. Store materiel in an orderly manner. Where shelf or rack loose issue areas do not have dividers, identification markings of each stock item will be visible and each stock numbered item will be accessible without moving other stock numbered items.

3.3.6.4.4. Complete location data on DA Form 3785-1 (Location Request) or remote inquiry materiel movement form for materiel previously prelocated only to temporary (building or area) location, or where an assigned location is changed. For all receipts, forward forms to the location control activity when storage has been accomplished.

3.3.6.5. The location control activity will update location records and clear the location suspense file upon notification of storage of materiel by the warehousing activity.

3.3.7. Location Deletions

When a location is deleted, warehouse personnel will remove the Loose Issue Label from the location, check the delete block, and send the label to the location control activity. When the label is attached to a Location Placard, send the placard with the label attached to the location control activity. When the location has a Location Placard without a Loose Issue Label, write "DELETE" or "KILL" on the placard and send it to the location control activity. Where there is no Loose Issue Label or Location Placard, delete the location by preparing DA Form 3785-1 (Location Request) and sending it to the location control activity.

3.3.8. Catalog/Management Data Changes

Catalog/management data changes may be received at the storing installation on DA Form 2510 (Storage Item Data Change Document). For Army Master Data File changes prescribed by AR 708-1, general purpose cards or magnetic tape may be received. Upon receipt of these changes, the following actions will be taken.

3.3.8.1. Hold all changes until the last work day prior to the effective date of the change.

3.3.8.2. On last work day prior to the effective date, prepare DA Form 3783 (Stock Change and/or Physical Security Change Notice) and a control listing.

3.3.8.3. Change stock location records to show the new data.

3.3.8.4. Move materiel to new location or consolidate materiel, as appropriate.

3.3.8.5. Update loose issue labels and location placards to show the data change. Affix new labels/placards at the location.

3.3.8.6. Affix the hard copy of DA Form 3783 to the materiel in location.

3.3.8.7. Return the remaining copy of DA Form 3783 to the controlling activity where it will be checked against the control listing to verify that the data changes were made at the location.

3.3.9. Remarking of Items with a Superseded Stock Number, Unit of Issue, or Expiration Date

3.3.9.1. Stock does not have to be moved for the sole purpose of changing stock numbers or other data on containers or pallet count placards. Corrections will be made at time of receipt, programmed rewarehousing, issue, on any other action involving movement of materiel.

3.3.9.2. When remarking stock with a superseded stock number, unit of issue, or expiration date, the current data will be shown on the outermost container for each stock numbered item. It will not be necessary to change markings on each package or item within if the exterior container is issued without opening. If packages or items are removed from containers, they will be marked when they are removed to assure that the correct data are shown at time of issue.

3.3.9.3. A DA Label 142 (Superseded Label) will be used to identify containers where the interior packages have a superseded stock number, unit of issue, or expiration date.

3.3.9.4. When the unit of issue of an item changes, repackaging may be required before the item is issued. The DA Form 3781 (Check Unit of Issue Notice) and DA Label 142 will be used to alert warehouse personnel to this situation. The forms will be affixed to each outer container of the materiel affected.

3.3.10. Location Changes Related to Rewarehousing

Location consolidations involving materiel movements to other buildings or materiel movements generated by major rewarehousing actions will be centrally controlled consistent with established warehousing needs and security requirements. Such movements will begin only after coordination with the location activity. During such moves, appropriate action will be taken to update the locator file, location site identification, and the loose issue planograph file of empty locations, as applicable.

3.3.11. Location Survey

3.3.11.1. A complete location survey will be conducted at least once each fiscal year, in the first quarter, and more often if needed. Small arms storage areas will be completely surveyed semiannually. The need for an additional complete location survey can be determined by a statistical sampling location survey. A statistical sampling survey will be conducted at least once each fiscal year, in the third quarter. If the statistical sampling survey does not indicate that the prescribed accuracy rate is being achieved, a complete survey will be taken in the following month. The statistical sampling survey is based on a sample of the total location file. MIL-STD-105 (table 1-General Inspection Level II and the 1.5 AQL column of table II-A) is used to figure the sample size and lot acceptance/rejection limits. The locations to be sampled will be randomly selected. One-half of the sample will be a file-to-floor check of locations chosen from the location file. The other half of the sample will be a floor-to-file check of locations in the vicinity of those checked in the file-to-floor half of the sample.

3.3.11.2. A perpetual location survey may be used in lieu of the surveys described in 3.3.11.1 above. In a perpetual survey, each location is surveyed at least once a year and the surveys are spread throughout the 12 months of the year instead of being done in 1 month. Sampling is not done when using the perpetual survey.

3.3.11.3. The DA standard location avcuracy will be maintained as prescribed by AR 740-26.

3.3.11.4. A plan will be developed prior to the start of the location survey. This plan should include the following details:

3.3.11.4.1. Cutoff, starting, and completion dates, mutually agreed upon by the warehousing, inventory location, and data processing activities.

3.3.11.4.2. Review and updating of standard operating procedures, if necessary.

3.3.11.4.3. Designation of a survey control activity.

3.3.11.4.4. Surveying work crew organization, strength, assignment, reporting points, reporting schedule, and training. Training of survey work crew personnel should include an explanation of the purpose and objectives of the location survey, the location numbering system, and the Inventory/Location Survey Work Card (DA Form 2000). They should also be trained in matching the survey card against materiel and location data; preparing location additions and deletions; and checking, correcting, and recording errors. After training, personnel should be assigned to specific work crews and survey areas. Crew strengths will depend on area layout, lighting, materials handling equipment requirements, and quantity of locations to be surveyed. For example, only one person may be required to survey a bin area, but two people may be required in a bulk storage area when lighting is limited and materials handling equipment is required.

3.3.11.4.5. Preparation and distribution of survey work card decks and location survey listings.

3.3.11.4.6. Reporting, verification, and control requirements.

3.3.11.5. The location survey will be performed as follows:

3.3.11.5.1. Location actions should be frozen during the survey except for those generated by the survey or storage of receipts.

3.3.11.5.2. Complete all in-process location actions prior to the cutoff date.

3.3.11.5.3. On the cutoff date, the data processing activity will prepare two decks of survey work cards in location sequence. One deck is for use by survey crews and one is held in the data processing activity for control purposes. The second deck is not required where data processing procedures provide for maintenance of control file on magnetic surface media. A two-copy listing in location sequence will also be prepared with one copy for the area supervisor and one copy for personnel reviewing accuracy. Cards and listings will be forwarded to the survey control activity.

3.3.11.5.4. The survey control activity will group survey work cards and listings into survey lots by warehouse or area and will forward applicable survey data to respective warehouse and area supervisors for distribution to survey crews.

3.3.11.5.5. Survey crews will compare data at the site with data on the survey work card.

3.3.11.5.6. The following reportable variances will be recorded in the blocks provided in the location survey work card:

3.3.11.5.6.1. Materiel in warehouse location without a survey work card.

3.3.11.5.6.2. Survey work card without corresponding stock at that warehouse location provided that a permanent location is not being reserved for the item.

3.3.11.5.6.3. Mismatch of any of the following data elements:

3.3.11.5.6.3.1. Unit of issue.

3.3.11.5.6.3.2. Condition code.

3.3.11.5.6.3.3. Physical Security/Pilferage code.

3.3.11.5.6.3.4. Shelf life code.

3.3.11.5.6.3.5. Mixed stock.

3.3.11.5.6.3.6. Unidentified stock.

3.3.11.5.7. The following minor storage deficiencies will be recorded in blocks provided on the location survey work cards:

3.3.11.5.7.1. Unsafe placement of containers.

3.3.11.5.7.2. Identification markings turned from view.

3.3.11.5.7.3. Open containers without an open box label where the label is required.

3.3.11.5.7.4. Missing or improvised bin labels or location placards.

3.3.11.5.7.5. Missing Stock Change and/or Physical Security Change Notice.

3.3.11.5.7.6. Illegible materiel identification.

3.3.11.5.7.7. Missing set identification.

3.3.11.5.7.8. Location markings missing or illegible.

3.3.11.5.8. When information on materiel and information on the survey work card match, mark the card to indicate that the location has been checked.

3.3.11.5.9. When the information on materiel and survey work card do not match, indicate the error in the blocks provided on the survey work card.

3.3.11.5.10. When there is no stock at the location, write "No Stock" on the face of the survey work card or otherwise indicate that the location is to be deleted.

3.3.11.5.11. Prepare a location add for each occupied location that does not have a location survey work card. The location add will go to the warehouse or area survey supervisor for review.

3.3.11.5.12. When the unit of issue, condition code, physical security/pilferage code or shelf life code do not match, annotate the survey work card with the information that appears at the location.

3.3.11.5.13. When mixed stock (more than one stock number/condition code) is found at the location, mark the mixed stock block on the survey work card.

3.3.11.5.14. When unidentified stock is found at a location and there is a survey work card, mark the "unidentified stock" block on the card. When there is no survey work card, write the location and "unidentified stock" on a location add document.

3.3.11.5.15. When a minor storage discrepancy is found, check the appropriate block on the survey work card.

3.3.11.5.16. Send all survey work cards and location adds to the warehouse or area survey supervisor.

3.3.11.6. The warehouse or area survey supervisor will review location survey adds, deletes, and data corrections and forward them to the central location control activity.

3.3.11.7. The central location control activity will use the cards and location adds to research errors and prepare input to update the stock location records.

3.3.11.8. All errors discovered during the course of the location survey will be corrected.

3.3.11.9. Inventory records will be updated when necessary.

3.3.11.10. Unidentified stock will be identified by the appropriate activity.

3.3.11.11. Research will be performed to determine if a recorded location exists for stock found during the location survey. Rewarehousing will be accomplished if appropriate.

3.3.11.12. During the course of location surveys, actions by survey crews will be subjected to in-process review to ensure the accuracy of the survey results. This will be done by selecting a sample from a completed location survey lot. The sample size will be based on lot size in accordance with MIL-STD-105. One-half of this sample will be selected at random from the location survey listing to conduct a file-to-floor, in-process review. The remaining half of the sample will be selected from locations in the approximate area of those selected from the location survey listing and will represent a floor-to-file, in-process review. The sample elements reviewed should match the survey elements. The acceptable level of performance for the in-process review samples will be the same as for the overall survey. Based on the findings, corrective action and additional training, when required, will be instituted during the course of the survey.

3.3.11.13. After completion of the survey, survey work cards with errors will be forwarded to an applicable activity for keypunching.

3.3.11.14. After keypunching, location survey data will be compiled as follows:

3.3.11.14.1. Listings of reportable variances and minor storage deficiencies will be prepared and sent to the survey control activity.

3.3.11.14.2. A listing of minor storage deficiencies will be prepared in location sequence and a copy forwarded to the warehousing activity for action to correct deficiencies. (As an alternate, cards themselves may be forwarded after necessary listings have been prepared.)

3.3.11.14.3. Copies of the listings of reportable variances and minor storage deficiencies will be used by the survey control activity to summarize survey data and accomplish accuracy computations for reporting purposes.

3.3.11.15. Only reportable variances will be used in survey accuracy computations for the record in paragraph 3.3.11.16 below. Only one variance per location will be charged. The survey record, however, will reflect all reportable variances and will be used for management assessment of the condition of the location system. Physical security/pilferage code land shelf life code errors will be corrected but will not be counted as errors when computing the accuracy rate.

3.3.11.16. DA Form 3787-R (Depot Record of Location Survey) (fig. 15) will be prepared upon completion of the survey. DA Form 3787-R will be locally reproduced on 11" × 8½" paper. The Depot Record of Location Survey and a recap of minor storage deficiencies will be available for local command action within 30 days after completion of the survey. The recap of minor storage deficiencies will help point out problem areas related to warehousing, materiel identification, and location identification.

Figure 15. How to prepare DA Form 3787-R (Depot Record of Location Survey).

Field Legend	Block	Explanation	Data Source
Materiel category	a	Enter either "ammunition" or "all materiel less ammunition."	Self-explanatory.
To:		Enter: Applicable headquarters.	Self-explanatory.
From:		Enter the address of the installation preparing the report.	Self-explanatory.
Date prepared		Enter the date the report is prepared.	Self-explanatory.
Location lot number	b	Not used.	
Type of survey	c	Enter "S" for sample, "C" for complete, or "N" for none, as applicable.	Self-explanatory.
Lot size	d	Enter the total number of locations assigned to the location survey lot.	Self-explanatory.
Locations surveyed	e	Enter the total number of locations surveyed during the reporting period.	Self-explanatory.
Number locations with variances	f	Enter the number of locations that have any variances.	Computed.
Lot accuracy level	g	Enter the accuracy level determined for the location survey lot- $100-\left(\frac{\text{locations w/variances}}{\text{locations surveyed}}\right)\times 100$	Computed.
Established/ additions	h	Enter the total number of locations established or additions processed to the locations records, coincident to the location survey. When the NSN of recorded data and actual assets differ, the error will be classified as a location established action only.	Location survey work card or location request.
Deletions/killed	i	Enter the total number of location deletions or kills processed to the location record, coincident to the location survey.	Location survey work cards.
Mixed stock	j	Enter the total number of instances of mixed stock discovered, coincident to the location survey.	Location survey work cards.
Condition code	k	Enter the total number of instances of wrong condition code discovered; coincident to the location survey.	Location survey work cards.

Figure 15. (Continued)

Figure 15. How to prepare DA Form 3787-R (Depot Record of Location Survey).

Field Legend	Block	Explanation	Data Source
Physical security classification	l	Enter the total number of physical security/pilferage code changes discovered, coincident to the location survey.	Location survey work cards.
Unit of issue	m	Enter the total number of unit of issue changes discovered, coincident to the location survey.	Location survey work cards.
Shelf-life code	n	Enter the total number of shelf-life code changes discovered, coincident to the location survey. Leave blank for ammunition items.	Location survey work cards.
Unidentified stock	o	Enter the total number of unidentified stock discovered, coincident to the location survey.	Location survey work cards.
Lot number	p	Enter the total number of ammunition lot number changes discovered, coincident to the location survey. Leave blank for other than ammunition items.	Location survey work cards.
Total variances	q	Enter the total number of reportable variances (sum of columns h, i, j, k, l, m, n, o, and p) for the lot.	Self-explanatory

Figure 15. How to prepare DA Form 3787-R (Depot Record of Location Survey).

Field Legend	Block	Explanation	Data Source
Materiel category	a	Enter either "ammunition" or "all materiel less ammunition."	Self-explanatory.
To:		Enter: Applicable headquarters.	Self-explanatory.
From:		Enter the address of the installation preparing the report.	Self-explanatory.
Date prepared		Enter the date the report is prepared.	Self-explanatory.
Location lot number	b	Not used.	
Type of survey	c	Enter "S" for sample, "C" for complete, or "N" for none, as applicable.	Self-explanatory.
Lot size	d	Enter the total number of locations assigned to the location survey lot.	Self-explanatory.
Locations surveyed	e	Enter the total number of locations surveyed during the reporting period.	Self-explanatory.
Number locations with variances	f	Enter the number of locations that have any variances.	Computed.
Lot accuracy level	g	Enter the accuracy level determined for the location survey lot- $100-\left(\frac{\text{locations w/variances}}{\text{locations surveyed}}\right)\times 100$	Computed.
Established/ additions	h	Enter the total number of locations established or additions processed to the locations records, coincident to the location survey. When the NSN of recorded data and actual assets differ, the error will be classified as a location established action only.	Location survey work card or location request.
Deletions/killed	i	Enter the total number of location deletions or kills processed to the location record, coincident to the location survey.	Location survey work cards.
Mixed stock	j	Enter the total number of instances of mixed stock discovered, coincident to the location survey.	Location survey work cards.
Condition code	k	Enter the total number of instances of wrong condition code discovered; coincident to the location survey.	Location survey work cards.

Figure 15. (Continued)

Figure 15. How to prepare DA Form 3787-R (Depot Record of Location Survey).

Field Legend	Block	Explanation	Data Source
Physical security classification	l	Enter the total number of physical security/pilferage code changes discovered, coincident to the location survey.	Location survey work cards.
Unit of issue	m	Enter the total number of unit of issue changes discovered, coincident to the location survey.	Location survey work cards.
Shelf-life code	n	Enter the total number of shelf-life code changes discovered, coincident to the location survey. Leave blank for ammunition items.	Location survey work cards.
Unidentified stock	o	Enter the total number of unidentified stock discovered, coincident to the location survey.	Location survey work cards.
Lot number	p	Enter the total number of ammunition lot number changes discovered, coincident to the location survey. Leave blank for other than ammunition items.	Location survey work cards.
Total variances	q	Enter the total number of reportable variances (sum of columns h, i, j, k, l, m, n, o, and p) for the lot.	Self-explanatory

DEPOT RECORD OF LOCATION SURVEY
For use of this form, see TM 743-200-1; the proponent agency is DARCOM.

MATERIEL CATEGORY
a.

TO: *(Include ZIP Code)*

FROM: *(Include ZIP Code)*

DATE PREPARED

						REPORTABLE VARIANCES									
LOC LOT NO. b	TYPE SURVEY c	LOT SIZE d	LOCATIONS SURVEYED e	NO. LOCS WITH VARIANCES f	LOT ACCY LEVEL PERCENT g	ESTAB/ ADDS h	DELETE/ KILLED i	MIXED STOCK j	COND CODE k	PSC l	U/I m	SHELF LIFE CODE n	UNIDENT STK o	LOT NO. p	TOTAL VARIANCES q

DA FORM 3787-R, 1 Sep 71

Figure 15. Depot Record of Location Survey (DA Form 3787-R).

APPENDIX 33-1

TITLE: Stock Location Card
FORM NUMBER: DA Form 3785.
APPLICATION: General Supplies—Manually Maintained Location File

USE: This is used to develop the manual stock location file for general supplies at EAM equipped depots. (It is also used to record off-line stock locations which are supplemental to a computer record.)

SUGGESTED CARD COLUMN USAGE

Field legend	*Card columns*	*Interpreter print positions*	*Explanation*	*Data source, or applicable reference*
Document Identifier code	1-3	1-3 3d line	Enter local internal code.	Locally developed.
Blank	4-7			
Stock number	8-22	5-19 3d line	Stock number and additional identification data when applicable.	Self-explanatory.
NATO nation code number	23-24	20-21 3d line	Identifies the NATO country of origin.	AR 708-1.
Units of issue	25-26	23-24 3d line	Alphabetic abbreviation representing unit of issue.	AR 708-17.
Custody code	27	26 3d line	Identifies location usage. "D"—depot property, "M"—mission stock, "S"—depot property at satellite depot.	Self-explanatory.
Condition code	28	28 3d line	Alphabetic code representing degree of serviceability of the item.	AR 725-50.
Date of last Inspection	29-32	18-21 5th line	EAM data processing activities will enter the last two digits of the current year and the two digit month.	Inspection record.
Inspection frequency code	33	16 5th line	EAM data processing activities will enter the appropriate code.	Quality assurance directives.
Miscellaneous	34-46	23-35 5th line	Enter miscellaneous information as required.	Self-explanatory.
Stock location	47-55	52-60 3d line	The location established for the stock number.	Self-explanatory.
Type storage code	56-58	48-50 3d line	Represents physical characteristics of the warehouse location.	Locally developed.
Expiration date	59-62	43-46 3d line	Last two digits of the year and two digit month of the expiration date.	Self-explanatory.
Blank	63-64			
Type change code	65	30 3d line	EAM data processing activity will enter "A" for addition, "D" for deletion, or "C" for change.	Self-explanatory.
Locator activity code	66	32 3d line	Codes H, M and L, represent high, medium and low activity of the item.	Self-explanatory.
Manager routing identifier	67-69	6-8 5th line	Designates the item manager.	AR 725-50.
Identification number code	70	34 3d line	Identifies the type of stock number by the initiating source.	AR 708-1.
Deletion code	71	36 3d line	Data processing will enter a "D" when applicable.	Self-explanatory.
Blank	72-74			
Inventory category	75	38 3d line	Identifies each item for grouping into inventory lots and segments.	AR 740-26.
Shelf life code	76	41 3d line	Represents shelf-life time limitations.	AR 708-1.

Field legend	*Card columns*	*Interpreter print positions*	*Explanation*	*Data source or applicable reference*
Physical security classification and pilferage code	77	4 5th line	Represents the degree of security assigned to the stock number.	AR 708-1.
Special control item code	78	10 5th line	Designates items requiring special controls.	AR 708-1.
TAMMS item	79	12 5th line	Enter "T" to indicate TAMMS item.	TM 38-750.
Modification work order (MWO)	80	14 5th line	Enter "M" for an item requiring an MWO.	TM 38-750-2.

TITLE: Stock Change Card.
FORM NUMBER: DA Form 3783
APPLICATION: All commodities/all installations.
USE: Indicates stock number or unit of issue change. Affix to the materiel at the location.

SUGGESTED CARD COLUMN USAGE

Field legend	*Card columns*	*[illegible] interpreter print positions*	*Explanation*	*Data source*
Document identifier code	1-3	1-3 1st line	Enter local internal code.	Locally developed.
Blank	4-7		Leave blank.	
Federal stock number (FSN) (To)	8-22	6-20 1st line	Enter the current RSN, with additional data when applicable.	AR 708-1.
Blank	23-24		Leave blank.	
Unit of issue (To)	25-26	23-24 1st line	Enter the current two-digit abbreviation of the unit of issue, as applicable.	AR 708-1.
Blank	27-40		Leave blank.	
Location	41-49	51-59 1st line	Enter the storage location as established for the item.	Self-explanatory.
Type of storage code	50	60 1st line	Enter the type of storage code for the location.	Locally developed.
Blank	51-57		Leave blank.	
FSN (From)	58-72	6-20 3d line	Enter the old FSN or part number, with additional data when applicable.	AR 708-1.
Blank	73-74		Leave blank.	
Unit of issue (From)	75-76	23-24 3d line	Enter the old two-digit abbreviation of the unit of issue, applicable to the item.	AR 708-1.
Blank	77-80		Leave blank.	

TITLE: Location Request.
FORM NUMBER: DA Form 3785.
APPLICATION: General supplies, all installations.
USE: Accomplishes location transactions and movement of materiel within an installation boundary.

SUGGESTED CARD BLOCK USAGE

Field legend	*Block*	*Explanation*	*Data source*	*Applicable* ADP	PCM
Type of segment	A	Enter one of the following codes: 2—mission items. 3—installation stock account items.	Computer assigned.	X	
Expiration date	B	Enter the expiration date of the item as it pertains to shelf life (year and month). Enter a one-digit numeric year, i.e., "6" for 1966, "7" for 1967, and a two-digit numeric month, i.e., "01" for January.	Item package markings or compute based on shelf-life code.	X	X
Federal stock number (FSN)	C	Enter the FSN or part number that identifies the material with additional identification data, when applicable.	Self-explanatory.	X	X
Unit of issue	D	Enter the standard two-character alphabetic abbreviation for the unit of issue as indicated in the item data record.	AR 708-1.	X	X
Inventory category.	E	Enter the one-digit inventory category code.	Item record.	X	X
Ownership code	F	Leave blank.			
Condition code	G	Enter the one-character, alphabetic condition code.	AR 725-50.	X	X
Shelf-life item code	H	Enter the one-digit, shelf-life item code.	AR 708-1.	X	X
Special number	I	Enter the USA number, assembly order control number, or other identification peculiar to the item, when appropriate.	Self-explanatory.	X	X
Loose-issue size code	J	Enter the applicable loose-issue size code desired for storage of the item(s). Complete this block for "adds," "deletes," and the "added" location on changes.	Locally developed	X	X
Type of location code	K	Enter one of the following codes: M—manager of a multi-owned item. O—owner of a multi-owned item. Blank—not multi-owned.		X	X
Type of storage code	L	Enter the type of storage code for the added location. Complete this block for "adds," "deletes," and the "added" location on changes.	Locally developed	X	X
Type of change code	M	Enter one of the following codes: A—Additions. C—Changes. D—Deletions.	Self-explanatory.	X	X
Physical security classification (PSC) code	N	Enter the alphabetic PSC code	AR 708-1.	X	X
Special control item code	O	Enter the one-digit, numeric special control item code.	AR 708-1.	X	X
Commodity manager routing identifier code	P	Enter the three-digit, alphabetic-numeric code.	AR 725-50.	X	X
TAMMS item	Q	Enter a "T" when TAMMS forms are required.	TM 38-750.	X	X
MWO item	R	Enter an "M" when MWO's are required.	TM 38-750-1.	X	X

Field legend	Block	Explanation	Data source	Applicable ADP	 PCM
Loose-issue size code	S	Enter the loose-issue size code for the deleted location when block M contains a "C" only.	Locally developed	X	X
Type of storage code	T	Enter the type of storage code for the deleted location when block M contains a "C" only.	Locally developed	X	X
Deletion location	U	Enter the location to be deleted when block M contains a "C" or "D."	Self-explanatory.	X	X
Addition location	V	Enter the location to be added when block M contains an "A" or a "C."	Self-explanatory.	X	X
Date	W	Enter the date that the form is prepared.	Date prepared.	X	X
Name	X	Secure the name of the person preparing the form.	Self-explanatory.	X	X
Remarks		As required.			

TITLE: Depot Report of location Survey

Field legend	*Block*	*Explanation*	*Data source*
Materiel category	a	Enter either "ammunition" or "all materiel less ammunition."	Self-explanatory.
To:		Enter. Applicable headquarters.	Self-explanatory.
From:		Enter the address of the installation preparing the report.	Self-explanatory.
Date prepared		Enter the date the report is prepared.	Self-explanatory.
Location lot number	b	Leave blank.	
Type of survey	c	Enter "S" for sample, "C" for complete, or "N" for none, as applicable.	Self-explanatory.
Lot size	d	Enter the total number of locations assigned to the location survey lot.	Self-explanatory.
Locations surveyed	e	Enter the total number of locations surveyed during the reporting period.	Self-explanatory.
Number locations with variances	f	Enter the number of locations that have any variances.	Computed.
Lot accuracy level	g	Enter the accuracy level determined for the location survey lot— $\left(100 - \frac{\text{Locations w/variances}}{\text{location surveyed}} \times 100\right)$	Computed.
Established/additions	h	Enter the total number of locations established or additions processed to the location records, coincident to the location survey. When the FSN of recorded data and actual assets differ, the error will be classified as a location established action only.	Location survey work card or location request.

Field legend	Block	Explanation	Data source
Deletions/killed	i	Enter the total number of location deletions or kills processed to the location record, coincident to the location survey.	Location survey work cards.
Jixed stock	j	Enter the total number of instances of mixed stock discovered, coincident to the location survey.	Location survey work cards.
Condition code	k	Enter the total number of instances of wrong condition code discovered, coincident to the location survey.	Location survey work cards.
Physical security classification	l	Enter the total number of physical security code changes discovered, coincident to the location survey.	Location survey work cards.
Unit of issue	m	Enter the total number of unit of issue changes discovered, coincident to the location survey.	Location survey work cards.
Shelf-life code	n	Enter the total number of shelf-life code changes discovered, coincident to the location survey. Leave blank for ammunition items.	Location survey work cards.
Unidentified stock	o	Enter the total number of unidentified stock discovered, coincident to the location survey.	Location survey work cards.
Lot number	p	Enter the total number of ammunition lot number changes discovered, coincident to the location survey. Leave blank for other than ammunition items.	Location survey work cards.
Total variances	q	Enter the total number of reportable variances (sum of columns h, i, j, k, l, m, n, o, and p) for the lot.	Self-explanatory.
Total	r	Enter the totals of columns d, e, f, h, i, j, k, l, m, n, o, p, and q.	Column addition.
Depot accuracy level	s	Enter the depot accuracy level. $100 - \left(\frac{\text{total of column F}}{\text{total of column E}} \times 100 \right)$ *Example:* $100 - \left(\frac{20}{750} = 100 \right) = 97.3\%$	Computed.

CHAPTER 3

STORAGE PROCEDURES

Section IV. PEST CONTROL

	Paragraph	Page
General	3.4.1	34-1
Responsibilities	3.4.2.	34-1
Surveillance inspection	3.4.3.	34-1
Good housekeeping	3.4.4.	34-1
Insect control measures	3.4.5.	34-1
Control measures, rodents	3.4.6.	34-2
Control measures, birds	3.4.7.	34-2
Reclamation and disposal of infested stocks	3.4.8.	34-2
Training and safety	3.4.9.	34-2
Cleaning and disinfestation by contract	3.4.10.	34-2
Methods of prevention	3.4.11.	34-2
Specific item considerations	3.4.12.	34-3
Fumigation methods and procedures	3.4.13.	34-4
Fumigation safety precautions	3.4.14.	34-6
Other methods of fumigation	3.4.15.	34-6

3.4.1. General

The objectives of this section are to implement the insect and rodent control measures prescribed in TM 743-200 and other applicable directives, and to furnish technical guidance in the use and operation of certain equipment related to this program. Additional technical information is available in manual TM 5-632. Pest control measures pertinent to ammunition items of supply can be found in paragraphs 5.2.1. through 5.2.6. of this manual. Storage managers will insure that developed programs for care of supplies in storage include the implementation of programs to safeguard against the destructive impact of contamination and insect damage.

3.4.2. Responsibilities

3.4.2.1. See TM 5-632.

3.4.2.2. The chief of the storage activity is responsible for the physical care of supplies, including such preventive treatment as application of mothicides in containers during the packing process, or like care and preservation treatment normally applied to items of stock, general warehouse sanitation, and detection of insect and rodent infestation. Required materials and supplies will be requisitioned in accordance with authorized allowances. Items required, but not listed in the tables, may be obtained upon submission of properly documented requisitions to the local property officer. Services of an Army entomologist will be utilized, as required, to assist in the training of personnel for insect and rodent control activities, to furnish technical advice and assistance in unusual infestation or rodent control problems, or in the approval and use of pesticides and sprays not authorized in current TA's, or in this manual.

3.4.3. Surveillance Inspection

A visual inspection of vulnerable stocks and storage areas will be made at 30-day intervals by qualified representatives of the storage activity, and the installation Post Engineer office. The findings of this inspection will be made the subject of a memorandum from the storage activity to the Post Engineer, setting forth any deficiencies that require action by the Post Engineer. Negative memorandums will not be required. Reference TM 743-200.

3.4.4. Good Housekeeping

(See TM 743-200.)

3.4.5. Insect Control Measures

(See TM 743-200.)

3.4.6. Control Measures, Rodents

(See TM 743-200.)

3.4.7. Control Measures, Birds

(See TM 743-200.)

3.4.8. Reclamation and Disposal of Infested Stocks

(See TM 743-200.)

3.4.9. Training and Safety

(See TM 743-200.)

3.4.10. Cleaning and Disinfestation by Contract

3.4.10.1 Stock found to be infested by insects or damaged by rodents may be shipped to commercial facilities for fumigation, cleaning, or repackaging if such facilities are not available at the depot, or if the work can be done more economically by contract.

3.4.10.2 Unusual or major problems of infestation or damage by insects or rodents will be the basis of a letter report to the US Army Materiel Command, ATTN: AMCMM-E, 5001 Eisenhower Avenue, Alexandria, VA 22304, or to the appropriate oversea commander, citing all pertinent circumstances as to type of infestation, stocks, or facilities infested, corrective measures taken, and cause of infestation, if known.

3.4.11. Methods of Prevention

3.4.11.1. Much can be done to prevent infestation as follows:

3.4.11.1.1. Elimination of dead spaces in walls and floors where accumulations of waste materials offer cover and food to insects.

3.4.11.1.2. If floors are of wood, fill all cracks and keep clean of dust or other debris.

3.4.11.1.3. Remove mop boards and fill openings with an elastic cement where floor and walls meet. All cracks around posts and in walls should be similarly filled.

3.4.11.1.4. Renovate worn concrete floors by overlaying with quick-setting plastic preparations.

3.4.11.2. Good housekeeping and the constant observation of warehouses and materiel is the best preventive measure against insect infestation. All personnel will be on the alert at all times for signs of infestation.

3.4.11.2.1. Pallets should be inspected regularly for signs of infestation, and, when necessary, sprayed with an approved residual compound.

3.4.11.2.2. Particular attention must be given to signs or presence of moths, insect tracks on floor, or holes cut in paper or fiberboard containers.

3.4.11.2.3. Items found to be infested will be treated immediately to prevent spread. If infestation is of sufficient magnitude, the entire warehouse should be fumigated, provided it can be tightly sealed.

3.4.11.3. When necessary for control, applications of residual insecticide will be made to the walls and floors of all sections and bays, with special attention given to the floor area under pallets.

3.4.11.3.1. For best results in CONUS installations, treatment should be effected about 1 April and 1 August. In sections of buildings which are heated during the winter, an additional application may be necessary about 1 December. Oversea commanders will establish treatment periods commensurate with geographical location.

3.4.11.3.2. Application is best made when warehouse sections or bays are empty (see TM 743-200).

3.4.11.3.3. For general residual spraying, a power sprayer is necessary. It should be wheel mounted so that it can be easily moved. The sprayer should be equipped with the following accessories: Pressure gage, pressure hose, extension rods, and flat spray nozzle. The machine should be adjusted to operate at 75 to 100 pounds per square inch spraying pressure with a 12½- to 30-gallon tank.

3.4.11.3.4. Where power sprayers are not available, hand sprayers of the compressed air knapsack type can be used for small areas or for emergency treatments.

3.4.11.4. Contact or space sprays are useful for the control of insect infestation in storage warehouses, for general cleanup purposes, and for the control of certain types of flying insects, where a comparatively non-toxic material is desired. They are not intended as a substitute for residual spray.

3.4.11.4.1. One of the best for this purpose is a pyrethrusoil spray containing extract of pyrethrum (total pyrethrin not less than 0.8%) in a high grade, odorless, light oil carrier, such as deodorized kerosene. This can be atomized for use against flying moths or applied in a coarser spray with an electric blower-type sprayer or a knapsack sprayer. Such sprays, when atomized or applied as a fog, do not leave a substantial or lasting insecticidal film on sprayed surfaces and are of limited value in the control of warehouse infestation. These sprays should be used when large numbers of flying insects are observed (see para 3.4.5.9. of TM 743-200).

3.4.11.5. Where necessary, warehouse sections should be treated with a fog aerosol at monthly intervals during the time of the year when average warehouse temperatures are 70° F. or above, and at 2-month intervals when the temperature is between 50° and 70° F. Treatment should be discontinued when the average temperature is below 50° F. (see para 3.4.5.10. of TM 743-200).

3.4.11.5.1. Recommended applying equipment for fog aerosol is a nonthermal type fog sprayer (FSN 3740-625-9989; sprayer, gasoline engine driven, 40 gph, fog, with vertically and horizontally adjustable manifold, nonthermal).

3.4.11.5.2. Instructions for operating such machines should be carefully followed. Machine operators should be trained to adjust the machine in order to obtain a fog which feels dry to the hand and does not produce wet areas on nearby surfaces. Training in the operation of this machine should be given by a factory representative or by an Army area entomologist. Note figure 5 and 6, chapter 3, section IV, TM 743-200.

3.4.11.5.3 The following general conditions must be followed in the application of fog aerosol treatments:

3.4.11.5.3.1. Coordinate and schedule fog treatment of warehouses or sections well in advance so that personnel may be evacuated and workload in affected areas may be coordinated with fogging schedules. Late afternoon application, with fogged area closed overnight, is recommended.

3.4.11.5.3.2. Prepare the area for treatment by closing all doors except one opening to the outside. Where there are roof ventilators, see that they are closed and that there are no broken panes in skylights or windows. Post appropriate warning signs on the closed doors. The following wording is suggested for the warning signs:

WARNING
Under Aerosol Treatment
Do Not Open Door
Keep Fire Away
Do Not Enter

Oversea commanders will include an additional warning in the language of the host country, as required.

3.4.11.5.3.3. The fog aerosol machine will be set up in an open doorway.

3.4.11.5.3.4. Personnel should not enter the section while spray is being applied or while it is filled with the insecticidal fog. To air out the bays sufficiently, all outside doors should be opened for at least a half hour.

3.4.12. Specific Item Considerations

3.4.12.1. Hardwood products, including pallets, stored in many areas of CONUS and overseas require treatment in order to control insects, bark beetles, termites, etc. When necessary, these products should be given permanent treatment through dipping as prescribed in paragraph 3.4.5.11 of TM 743-200.

3.4.12.2. The wood marine borer is a continuous threat to wooden vessels. Larva of these wormlike animals is about one-hundredth of an inch in length. They penetrate by boring and leaving pin hole size openings in the wood. They enter the wood through breaks in paint coating. All vessels being dry-docked should be examined closely for this borer. Three or four days' immersion in fresh water will usually kill this borer. When this treatment is not effective or practical, a treatment of sodium arsenate is effective.

3.4.12.3. Woolen products are likely to be infested by moths, beetles, silverfish, rats or mice. Depending upon degree and kind of infestation, use spray, traps or fumigation as control and preventive measure.

3.4.12.4. Leather, leather goods, hair, felt, and bristles. Infestation problems can occur from either carpet beetles or moths. Residual spray or in extreme cases fumigation will control or prevent infestation.

3.4.13. Fumigation Methods and Procedures

3.4.13.1. If, in spite of the recommended preventive measures, damaging infestation should occur, fumigation of a commodity and/or storage space may be necessary. This is the fastest and most effective method of destroying insects and their eggs. When this is required, the procedures and methods prescribed in TM 743-200 and the following contents of this section are prescribed.

3.4.13.2. Methyl bromide is the ideal fumigant for filled warehouses because it penetrates stacks effectively and is absorbed only to a small extent. It is effective only in well-constructed buildings that can be made practically airtight.

3.4.13.3. Hydrocyanic acid gas can be used in buildings that are reasonably tight, but is used chiefly when freeing empty warehouse space from insect infestation. It does not penetrate well into bags of milled cereals, but is effective in the case of other less condensed materials (see para 3.4.5.7. of TM 743-200).

3.4.13.4. Many warehouses are so constructed that it is virtually impossible to fumigate them successfully, in which case it is necessary to fumigate items under paulins or in vacuum or atmospheric fumigation chambers.

3.4.13.4.1. Railway boxcars can be used, although they are not usually of tight construction and need considerable sealing.

3.4.13.5. It is important to give adequate preparation to any warehouse before releasing the fumigant.

3.4.13.5.1. Loosely fitting window sash should be sealed with paste and paper or "puttied up" with flour and oil mixed to the consistency of putty. Another mixture suitable for this purpose consists of four parts of asbestos fiber, one and one-half parts of calcium chloride, and two parts of water.

3.4.13.5.2. Openings around window frames, door frames, and pipes should be calked. Large sliding doors that fit imperfectly should be calked with the flour-and-oil paste or the asbestos-calcium chloride mixture. For stripping window frames that are only slightly loose, gummed paper, adhesive tape, and strips of newspaper or kraft paper may be used.

3.4.13.5.3. When it is impossible to tighten a window or other opening by this method, the entire aperture should be sealed. For this purpose, a fiber-reinforced waterproof paper should be placed over the opening and secured with wooden cleats.

3.4.13.5.4. When methyl bromide is used as the fumigant, the paper employed for sealing purposes should be coated with oil or grease to resist gas transmission.

3.4.13.6. Warehouse fumigation should be accomplished when there is little wind since there is considerable air leakage even within seemingly tight structures.

3.4.13.6.1. An exposure period of 12 to 24 hours is recommended. Temperatures should preferably be above 70° F.

3.4.13.7. If hydrocyanic acid is authorized to be used as a space fumigant for empty warehouses, a dosage of 8 ounces per 1,000 cubic feet of space is adequate.

3.4.13.8. When methyl bromide is used, a dosage of 1 pound per 1,000 cubic feet of space is adequate if the temperature is above 60° F.

3.4.13.8.1. For temperatures below 60° F., an additional ½ pound of methyl bromide per 1,000 cubic feet should be added for each 5° drop in temperature.

Note. Hydro-cyanic acid will not be used except upon written approval of USASMC or appropriate oversea commander.

3.4.13.8.2. To obtain uniform distribution of the fumigant and to prevent stratification of the vapors of methyl bromide, electric fans should be operated for 1 hour after the release of the gas.

3.4.13.9. General policy on use of vacuum fumigation chambers and table on dosage and exposure period for various commodities is shown in chapter 3, section 4, of TM 743-200.

3.4.13.9.1. For those Army activities having vacuum fumigation chambers installed the procedure for activation and operation *in the order shown* is as follows:

3.4.13.9.1.1. Close suction line, vacuum breaker, and exhaust blower valves on chamber not being charged. Fill volatilizer with water to within 2 inches of the top of gauge glass.

3.4.13.9.1.2. Close inlet needle valve on volatilizer. Turn electrical heater switch to full heat. (Approx 2 hours are required to raise temperature to 200° F.)

3.4.13.9.1.3. Close 6-inch vacuum breaker valve and 6-inch exhaust system valve at rear of chamber.

3.4.13.9.1.4. Load chamber with commodity to be fumigated; close and clamp doors hand tight; do not use wrench.

3.4.13.9.1.5. Open 6-inch valve in suction line between pump and chamber. Start pump and evacuate chamber to desired vacuum —28 to 29 inches. When required vacuum has been reached, stop pump and close valve between pump and chamber.

3.4.13.9.1.6. Remove shipping cap from methyl bromide cylinder and place cylinder on platform scales near volatilizer. Connect the valve on the volatilizer by means of copper tubing.

3.4.13.9.1.7. Balance the scale beam and note weight. Set the scale for the required dosage of fumigant. For example: If scale beam balances at 130 pounds and the required dosage is 5 pounds set scale weight at 125 pounds.

3.4.13.9.1.8. Assure that inlet needle valve on volatilizer is closed. Open valve on methyl bromide cylinder one to two turns. Next, open inlet needle valve on volatilizer slowly, permitting methyl bromide to pass into the volatilizer from the cylinder. Regulate introduction of the gas so the flow will not be rapid enough to appreciably cool the pipe leading from the volatilizer to the chamber.

3.4.13.9.1.9. Close inlet needle valve on the volatilizer when scale beam begins to tip (tipping of scale beam indicates that the required dosage has been discharged). Close valve on methyl bromide cylinder. Open needle valve on volatilizer for a moment to permit residual methyl bromide in line to be pulled through volatilizer into the chamber. Then, again close inlet needle valve on volatilizer.

Note. Unless fumigation is in a continuous cycle, the volatilizer and cylinder equipment should be separated by removing the connecting copper tubing. Replace cap on methyl bromide cylinder and store cylinder in a safe place. Acritet 34-66 fumigant and methyl bromide are the fumigants to be used in vacuum fumigation chambers. Acritet 34-66 fumigant solution is packed in metal containers at normal atmospheric pressure and may be manually placed in the volatilizer or can be inducted into the chamber through use of the chamber's vacuum.

3.4.13.10. At normal fumigation temperature (60° F. or above), a 3-hour exposure period at a sustained vacuum of 27 inches is usually sufficient to secure 100 percent kill of all stages of insect life.

3.4.13.11. Provided chamber connections are tight and pump is operating efficiently, the fumigation cycle should be approximately as follows:

Load	20 minutes
Draw 28-inch vacuum	10–15 minutes
Introduce fumigant	3–5 minutes
Chamber under gas	180 minutes or overnight
Release vacuum: (breaking vacuum to 0 by opening vacuum breaker valve)	2–5 minutes

Air wash vacuum (draw 20-inch vacuum)	8 minutes
Break vacuum to 0 by opening vacuum breaker valve	2-5 minutes
When gauge reads 0, open exhaust fan valve, start fan, then crack door (unloading end) 2-inches. Run fan.	5 minutes
Open end doors wide, keep fan running while unloading	10 minutes

3.4.13.12. After fumigation, the following steps should be taken:

3.4.13.12.1. At end of exposure period, release vacuum to zero by opening the vacuum breaker valve slowly. As soon as the reading on the vacuum gauge is zero, restart the pump and immediately close the vacuum breaker valve.

3.4.13.12.2. Draw a 20-inch vacuum and cutoff pump.

3.4.13.12.3. Loosen bolts on both ends of unloading doors of chamber. Open vacuum breaker valve and bring vacuum gauge reading back to 0.

3.4.13.12.4. Start exhaust fan. (Never start fan until vacuum gauge reads 0.)

3.4.13.12.5. Open chamber door, end opposite from exhaust fan, 2 inches. Leave fan running with door in this position for 5 minutes.

3.4.13.12.6. Open doors wide on both ends of chamber and let fan run while unloading chamber.

3.4.14. Fumigation Safety Precautions

3.4.14.1. The following safety precautions will be taken in the use of fumigants and vacuum fumigation chambers. Also, refer to paragraph 3.4.9.1., of TM 743-200.

3.4.14.1.1. Store fumigants in a dry, well-ventilated, and locked enclosure.

3.4.14.1.2. Burn a red exterior light near a warning sign at each end of fumigation chamber during fumigation cycle.

3.4.14.1.3. Provide approved gas masks in a convenient exterior location.

3.4.14.1.4. Provide protective gloves (neoprene) for operators handling gas cylinders.

3.4.14.1.5. Provide a warning buzzer or bell with exterior control.

3.4.14.1.6. Avoid contact of the fumigants with the eyes, mouth, and skin.

3.4.14.1.7. If gas should become spilled or sprayed on operator, remove clothing immediately and wash affected skin. Contaminated shoes should be removed and not worn for at least 2 weeks.

3.4.15. Other Methods of Fumigation

3.4.15.1. In the fumigation of items of supply under paulins, (ref para 3.4.5.4. and 3.4.5.6., TM 743-200 and para 3.4.13.4. of this sec), provision must be made for an air dome at the top of the stack. This air dome must not only provide free air space at the top of the stack to aid in diffusion of the gas, it must extend beyond the outer top edges of the stack in such manner that the paulin cover does not rest against this edge, retaining the fumigant in the upper portion of the stack. Fumigant may be applied by use of plastic tubing leading from the supply source to the air dome at top of the stack.

3.4.15.2. When using rail cars for fumigation purposes (ref para 3.4.8.4.), the doors should be sealed with masking tape or some of the sealing materials suggested for sealing warehouses before the methyl bromide gas is applied.

3.4.15.2.1. Fumigant should be applied from the outside of the car through plastic or copper tubing that has been inserted through a hole near the center of the floor of the car. Tubing should be raised to a point above the load level within the car. After the gas has been applied, the tube can be withdrawn and the entry hole plugged.

3.4.15.2.2. After fumigation, railway cars should be thoroughly aerated before unloading operations are commenced in order to avoid danger to workmen.

CHAPTER 3

STORAGE PROCEDURES

Section V. STOCK DISCREPANCIES

	Paragraph	Page
General	3.5.1.	35-1
Discrepancies discovered at time of receipt	3.5.2.	35-1
Discrepancies discovered during issue, rewarehousing and inventory	3.5.3.	35-1
Equipment deficiencies	3.5.4.	35-2

3.5.1. General

The point of arrival of Army supplies at a storing installation is one of the major areas where operating personnel can discover and correct deficiencies; deficiencies that, if not discovered and corrected, will later compromise the supply effectiveness of the installation and result in unnecessary expense for corrective action. Certain types of deficiencies connected with the receipt of material have broad impact on procurement practices, packaging, packing, transport methods, and supply control policies. Therefore, the best interests of the Army require that these discrepancies be reported in a formal manner, defined as to type and frequency, enumerated as to extent and cost of corrective action required or taken, and properly publicized to preclude recurrence.

3.5.2. Discrepancies Discovered at Time of Receipt

3.5.2.1. Improper shipments resulting from deficiencies in preservation, packaging, packing, marking, and handling will be reported on DD Form 6 in accordance with AR 700-58.

3.5.2.2. The reporting of over, short, damaged, lost or astray military freight will be accomplished on SF Form 361 in accordance with the requirements of AR 55-355.

3.5.2.2.1. Discrepancies discovered related to small arms will require additional procedural controls.

3.5.2.2.2. Refer to chapter 3, section XII of this manual for specific details relative to small arms.

3.5.2.3. Claims for settlement on damaged or lost military freight will be accomplished in accordance with AR 735-11-1.

3.5.2.4. AR 735-11 defines conditions and procedures for adjusting discrepancies whenever a carrier (common or contract) fails to deliver all the packages of property listed on the bill of lading or shipping document or when the property is not delivered in the same condition as when accepted for shipment.

3.5.2.5. Items received which are short component parts will be reported as received. An itemized list of shortages as prescribed by AR 725-50 will be prepared to accompany receiving report.

3.5.2.6. Items received with a disagreement between quantity of property actually received and that recorded on the shipping document will be processed in accordance with AR 725-50.

3.5.2.7. Discrepancies involving materiel under the responsibility of the Defense Supply Agency will be processed in accordance with AR 735-110.

3.5.2.8. Army owned or contractor owned new materiel received in unserviceable condition for reasons other than those stated above will be reported as prescribed by the Army Materiel Command or appropriate oversea commander.

3.5.3. Discrepancies Discovered During Issue, Rewarehousing, and Inventory

3.5.3.1. See TM 743-200.

3.5.3.2. Materiel found in storage with latent preservation, packaging, and packing deficiencies requires preparation of a late DD Form 6 report. Reports of this type should be confined to stocks which constitute a problem resulting from a particular specification, preservative or packaging method. If materiel was recently procured, investigate to determine if warranty is applicable and still in effect to establish if the government has recourse to the manufacturer for correction of defects.

3.5.3.2.1. Reports will indicate the storage environment to which the materiel was subjected (i.e., open, closed, or controlled humidity storage, etc.), actual or estimated cost to correct deficiencies (materials and labor for repackaging item), the level of preservation, packaging and packing, and length of time in storage or date of manufacture.

3.5.3.2.1.1. Discrepancies discovered related to small arms will require additional procedural controls.

3.5.3.2.1.2. Refer to chapter 3, section XII of this manual for specific detail relative to small arms.

3.5.3.2.2. Reports of this nature will be annotated to the effect that the deficiencies are NOT INCIDENT TO SHIPMENT. These reports will be routed to the DARCOM Packaging, Storage, and Containerization Center, Tobyhanna Army Depot or DARCOM Ammunition Center, Savanna Army Depot, as applicable. No other report distribution is required unless materiel was under warranty in which case distribution will be in accordance with AR 700-58.

3.5.3.3. On items where no established stock number can be applied, DA Form 1988 (Request for National/NATO Stock Number) will be prepared in accordance with AR 708-series. DD Form 1487 (DoD Materiel Adjustment Document) will be prepared in accordance with AR 725-50. Completed documents will be submitted to the appropriate inventory control point by the most expeditious means.

3.5.3.4. Upon receipt of answer to request in 3.5.3.3. on DA Form 2510 (Storage Item Change Document) storage activity will accomplish action necessary to correct appropriate records, placards, and item markings in accordance with chapter 3, section III, of this manual.

3.5.3.5. Materiel of the Department of Army which is lost, damaged, or destroyed will have, unless otherwise exempt, a Report of Survey (DD Form 200) prepared in accordance with AR 735-11.

3.5.3.6. A report of discrepancy, for the purpose of adjusting accountable records, will be accomplished on DD Form 1487, DoD Materiel Adjustment Document, in accordance with the provisions of AR 725-50, under the following conditions:

3.5.3.6.1. Reidentification of stock.

3.5.3.6.2. Reclassification of items found to be improperly classified as to condition.

3.5.4. Equipment Deficiencies

Army owned equipment with deficiencies discovered in use, or during later inspection or testing which do not fall within the specific classifications described elsewhere in this section will be reported on DA Form 2407 in accordance with TM 38-750. Type of deficiencies included are those that could affect (or have affected) operability or efficiency of performance, impose hazard to personnel, supplies, or facilities, and affect operating life of equipment. These deficiencies may or may not be discernible in visual inspection or limited testing.

CHAPTER 3

STORAGE PROCEDURES

Section VII. INVENTORY

	Paragraph	Page
Introduction	3.7.1.	37-1
Definitions	3.7.2.	37-1
Inventory organization	3.7.3.	37-1
Inventory planning	3.7.4.	37-1
Inventory training	3.7.5.	37-2
Procedures	3.7.6.	37-2
Location audit reconciliation	3.7.7.	37-5
Reporting	3.7.8.	37-6
Appendix		

3.7.1. Introduction

Optimum economy in the management and use of Department of Army supplies and equipment requires accurate records of quantity, condition, ownership and logistics management data on individual items. These records require periodic verification. This is accomplished in part through actual physical counts. In addition to these counts, a periodic validation of accountable supply distribution activity (ASDA) records and the depot records (a location audit reconciliation) must be preformed. These two actions (physical count and location audit reconciliation) are further supplemented by location surveys (ch 3, sec III, this manual) thus providing an overall inventory verification program. AR 740-26 (Physical Inventory Control) establishes policies, objectives, responsibilities, procedures, and reporting requirements for total physical inventory control. This section provides greater detail in the area of depot operations related to inventory control actions.

3.7.1.1. Exclusions

Inventory of retail stocks at installations, activities/general support, and direct support units generally will be conducted in accordance with AR 711-16.

3.7.2. Definitions

In addition to those definitions in AR's 310-25, 725-50, and 740-26, the following apply:

3.7.2.1. Summarized balance. An item balance summarized by stock number and condition code, as of a predetermined point in time, for the purpose of comparing quantitative records with the physical count of an item or comparing custodial and accountable record balances.

3.7.2.2. Reconciliation. The action necessary to correctly identify the amount of a discrepancy as well as the action necessary to bring balance records and physical assets on hand into agreement.

3.7.3. Inventory Organization

The depot inventory control organization will include all directly related inventory tasks. These will include accomplishing counting actions, research, adjustments, reidentifications, location surveys, location audits, and the maintenance of logistics management data in item data files. This is essential to maintain inventory integrity in both physical assets and corresponding records. Organizational elements must have the authority to accomplish all assigned tasks, and this authority must be recognized at all levels of management. Inventory tasks will be performed by regularly assigned personnel highly trained in inventory skills and related supply functions.

3.7.4. Inventory Planning

Physical inventory actions must be planned at the depot and should consider—

3.7.4.1. Number of stock numbers involved.

3.7.4.2. Inventory requirements of stock numbers (complete or sampling).

3.7.4.3. Number of locations involved.

3.7.4.4. Manpower requirements (including research and adjustment manhour requirements).

3.7.4.5. Manpower availability.

3.7.4.6. Anticipated productivity.

3.7.4.7. Equipment requirements.

3.7.4.8. Scheduling to obtain maximum efficiency and accuracy.

3.7.4.9. Training requirements.

3.7.5. Inventory Training

To assure that a thoroughly experienced staff is available to perform inventory actions, training must be periodically given to both military and civilian personnel. Points for emphasis in such training are—

3.7.5.1. Purpose of inventory.

3.7.5.2. Familiarization with the inventory organization and each element's part therein.

3.7.5.3. Importance of attaining the highest degree of accuracy in counting, research, and adjustment actions.

3.7.5.4. A thorough orientation in:

3.7.5.4.1. Stock number make-up and units of issue.

3.7.5.4.2. Condition codes designating serviceable, unserviceable, or suspended materiel.

3.7.5.4.3. Document identifier codes pertinent to inventory research and adjustment actions.

3.7.5.4.4. Proper counting techniques and accurate recording of count data.

3.7.5.4.5. Significance of placards and labels used at location sites.

3.7.5.4.6. Improper or unsafe storage practices (including inadequate security measures) which may adversely affect the maintenance of an accurate inventory balance.

3.7.5.4.7. The stock location numbering system.

3.7.6. Procedures

3.7.6.1. Inventory requirements. All items do not have the same inventory requirements. For example, verification of balances must be accomplished by complete inventories for high value items and controlled inventory items (explained in appendix G to AR 740-26). Other items may be inventoried by statistical sampling methods. Items are assigned an inventory category code by the responsible item manager to indicate inventory requirements. Inventory category codes are forwarded to applicable ASDA's who, in turn, forward the codes to applicable depots. These codes are used to group items for inventory lot formation purposes. Codes broadcasted to the depot may be for all items owned by the ASDA or for only those items on record for a ASDA. The degree of mechanized processing capability at the depot will determine this. Code broadcast may be by DA Form 2510 (Storage Item Data Change Document) or by similar format on magnetic tape.

3.7.6.1.1. See section XII of this chapter for special inventory procedures pertaining to small arms.

3.7.6.1.2. Inventory category codes are shown and explained in appendix A.

3.7.6.2. Depot inventory capability. Each depot has a manpower resource which is available for the performance of inventories. When all items stored are the property of one ASDA this total manpower resource can be applied to them; but when more than one ASDA has items at a depot, then this manpower resource must be prorated. This is done by computing a percentage for each ASDA considering inventory requirements based on inventory category codes for all items stored. That is, the total number of items that must be counted should be computed based on complete inventories of items with inventory category codes 1, 3, 6, and 8 and sample inventories for items with inventory category code 4, 5, or 9. The depot capability is then prorated and reported based on the percentage of those items which are owned by each ASDA. Thus the

$$\frac{\text{Total inventories per ASDA}}{\text{Total inventories required for all ASDAS}} \times 100$$

equals the capability prorated to a specific ASDA.

3.7.6.2.1. The depot capability information must be provided to applicable ASDA's on a quarterly basis. The information should arrive 30 days prior to the start of each quarter. This quarterly capability information should show a total for general supply stock numbers stored and, if applicable, for ammunition stock numbers stored. The number of locations for these ammunition items must also be shown. The total inventory requirements for the fiscal year should then be shown separately in terms of a total for general supply stock numbers and in terms of totals for ammunition stock numbers and for ammunition locations. Capabilities to accomplish both scheduled and unscheduled inventories for general supply items and for ammunition items for the quarter and each month within the quarter should then be shown (ammunition items again reflecting totals for stock numbers and for locations). The total quarterly capability should then be shown (the sum of scheduled and unscheduled inventories) for general supply items and for ammunition items. The final total quarterly capability for ammunition items will represent ammunition locations.

3.7.6.2.2. To assist the ASDA in developing inventory lots, a lot formation listing is forwarded with the depot capability information. This listing provides the ASDA with stock numbers grouped by inventory category codes. For ammunition stock numbers, the listing also shows the number of locations involved for each stock number.

3.7.6.3. Inventory scheduling. ASDA's based on their own and the depot's capability, then provide the depot with quarterly inventory priority schedules. Schedules should arrive 20 days prior to the start of the quarter. These schedules must show an inventory category code and a lot type (app F, AT 704-26) for each lot number assigned. The approximate lot size must be shown. Schedules will depict inventories required for a particular stock number or for ranges of stock numbers or Federal Supply Classifications (FSC's). Beginning and ending stock numbers for these ranges will be shown. The approximate number of stock numbers to be inventoried and the proposed reconciliation month will be shown. The number of locations will be shown for ammunition items. The inventories scheduled should equal the capability information provided by depots concerned.

3.7.6.3.1. Since information by specific category code is required for reporting purposes, inventory category codes normally should not be mixed in the same lot on inventory schedules.

3.7.6.3.2. Scheduling inventories requires close coordination between the ASDA and the depot on the date(s) items will be counted, balances summarized, and on the dates of the reconciliation period. Complete inventories, special inventories, and sampling inventories are accomplished on a scheduled basis.

3.7.6.3.3. When scheduling sampling inventories, the following must be considered:

3.7.6.3.3.1. Optimum design of sample inventory lots will minimize inventory taking time for a lot. A lot size of 5,000 stock numbers is suggested. Smaller lot sizes require approximately the same sample size without a significant increase in accuracy confidence.

3.7.6.3.3.2. As a starting point, the lot accuracy for sampling inventories must be estimated. This can be done by determining what the accuracy level was after the previous inventory. If there was no previous inventory, use an estimate of 80—90 percent. If there is a strong indication that a sampling inventory will fail, then a complete inventory should be scheduled rather than expend time on a sample effort. These estimated lot accuracies are necessary for use of the sampling plan table in appendix A, AR 740-26.

3.7.6.4. Unscheduled inventories. Situations arise when unscheduled, selected item inventories are required by an ASDA due to urgent requirements to verify balances. Scheduled inventory actions may be adversely affected if these unscheduled inventories exceed 5 percent of the depot scheduled inventory capability. Specific approval to exceed this percentage must be obtained from the appropriate headquarters. The reason for limiting these unscheduled inventories is that control periods for capturing in-float documentation cannot be properly established and thus research actions become complex and time consuming.

3.7.6.5. Preparation of materiel for inventory. Daily application of proper storage practices will eliminate the need for crash efforts to get stored materiel ready for inventory actions. Inventory efforts are simplified when—

3.7.6.5.1. Materiel is properly identified and clearly marked.

3.7.6.5.2. Materiel is stored in a minimum number of locations.

3.7.6.5.3. A bulk storage row or column contains only items of a single stock number and condition code.

3.7.6.5.4. Materiel is properly aligned and stacked.

3.7.6.5.5. Items are not stored behind different stock numbered items or mixed in bin drawers.

3.7.6.5.6. Pallet loading patterns are standard for identically packed and packaged items.

3.7.6.5.7. Materiel identification markings are readily visible to inventory counters.

3.7.6.5.8. Potential problem areas for counting personnel are minimized by proper use of location placards, issue restriction placards, pallet count placards, magazine data cards, labels and other appropriate identification aids.

3.7.6.5.9. Handwritten container markings are prohibited.

3.7.6.5.10. Superseded container markings are obliterated.

3.7.6.5.11. Open boxes are minimized in storage areas and those necessary are identified by open box labels.

3.7.6.5.12. Loose materiel is packaged in uniform quantities to minimize counting efforts.

3.7.6.5.13. Location markings in storage areas are clearly designated.

3.7.6.5.14. When the storage practices above are enforced, erroneous inventory counts and man-hour usage should be minimized.

3.7.6.6. Counting. DD Form 1485 (AR 740-26) (DOD Physical Inventory Document) is used by the ASDA for requesting inventory counts. The same form is used by the depot for reporting count data. However, the information may be exchanged by use of magnetic tapes when processing equipment at each site is compatible.

3.7.6.6.1. DA Form 2000 (AR 740 26) (Inventory Count Card) is used by the depot for conducting physical counts.

3.7.6.6.2. When a complete inventory is scheduled, the depot counts all items in an inventory lot. The lot may be composed of a consecutive range of stock numbers, an FSC, or group of FSC's, or a nonconsecutive group of stock numbers which are specifically identified by the ASDA.

3.7.6.6.3. When sampling inventories are scheduled, the depot selects the actual stock numbers to be counted. This selection is based on lot sizes in the inventory schedules and on the sample selection tables in appendix A, AR 740 26. The items to be counted must be selected on a random basis. This can be done by following the selection procedures in Military Handbook 53 (Guide for Sampling Inspection) or computer equipped depots may have programs to perform the random selection of stock numbers.

3.7.6.6.4. The purpose of counting is to verify an item balance. Where custodial balances *are* authorized, the single count method is used. This means that when an initial count agrees with a custodial record balance counting stops. However, any difference between the custodial record balance and an initial count requires a recount. As long as the difference between the custodial record balance and a recount or between recounts is $200 or over, counting must continue. When the difference between the custodial record and a recount or between recounts is less than $200 counting stops and the last count is accepted. In float materiel and documentation must be considered as they may explain a difference between the custodial record balance and a count or between recounts. Discrepancy research will be in accordance with criteria in appendix B to AR 740-26. Custodial records must be purified prior to forwarding count and transaction information to the accountable activity for their reconciliation process.

3.7.6.6.5. Where custodial balances *are not* authorized stocks will be inventoried by the two count method. This means that at least two counts of the item must be made and possibly more until the dollar value of the difference between any two counts is less than $200. The last count is then accepted. In float material and documentation must be considered as it may explain a difference between counts. Discrepancy research will be in accordance with appendix B to AR 740-26.

3.7.6.6.6. At first glance, counting would seem to be a relatively simple action. This action can sometimes become complex however due to the need to consider different units of issue, condition codes, varying quantities in packages and packs, large quantities, and counting in areas without adequate lighting.

3.7.6.6.7. To assure the most effective counting efforts, recounts should be made by different personnel than those who made the previous count. A previous count card must not be used for a recount action.

3.7.6.6.8. The following areas must be emphasized in counting actions:

3.7.6.6.8.1. Count only materiel with a stock number matching the inventory count card. Mixed stock situations must be annotated on the count card so that corrective action can be taken.

3.7.6.6.8.2. Quantity markings on sealed containers may be accepted. Stock in containers which have been opened must be physically counted. Stock in containers which have questionable identification or quantity markings must be opened for item verification or a physical count.

3.7.6.6.8.3. The final count must show how many issue units of a stock number are in a location. Since the issue unit is not always simply "each" (it may be foot, hundreds of feet, gallons, pounds, or quantities of 10s, 100s, or even 1,000s), special caution must be exercised on units of issue to assure proper counts.

3.7.6.7. Accuracy levels.

3.7.6.7.1. On inventory lots subjected to complete inventories, the computed accuracy level is based on major discrepancies and is the actual accuracy of the lot. There is no minimum acceptable accuracy level in effect, since a complete inventory has been accomplished and the resultant accuracy level is firm.

3.7.6.7.2. On sampling inventory lots, the computed accuracy level, based on major discrepancies of items in the sample size, is the accuracy of the total lot. However, on sampling inventories there *is* a minimum acceptable accuracy level of 85 percent with a 95 percent confidence level. The confidence level means that by using the sampling table in appendix A, AR 740-26, lots which equal or exceed the minimum accuracy level are at least 85 percent accurate 95 percent of the time.

3.7.6.7.3. Where custodial balances *are* authorized, the depot computes accuracy levels. Where custodial balances *are not* authorized, the ASDA must compute accuracy levels.

3.7.6.7.3.1. The total dollar value of net gains and losses for a stock number (considering all condition codes) is used to determine major discrepancies. Sampling inventory accuracy levels are computed as follows:

$$100 - \frac{\text{Number of major discrepancies} \times 100}{\text{Number of items sampled}}$$

the result expressed as a percentage is the lot accuracy.

3.7.6.7.3.2. The percentage in 3.7.6.7.3.1. is then compared to the sampling plan table in appendix A, AR 740-26.

3.7.6.7.3.3. If the computed accuracy level is the *same* or *above* the acceptable level in appendix A, AR 740-26, the sampling inventory passes.

3.7.6.7.3.4. If the computed accuracy level is *below* the rejection level in appendix A, AR 740-26 the sample failed, and each item in the lot must now be scheduled for a count. In other words, a complete inventory of the lot is required.

3.7.6.7.3.5. If the computed accuracy level is *between* the rejection and acceptable level in appendix A, AR 740-26, a second sample must be taken. The computed accuracy level of the first sample will be the new estimated lot accuracy. The new sample size is the difference between the first sample size and the sample size called for by the new estimated lot accuracy. When these additional items are counted, the items from both samples are added together, and major discrepancies from both samples are also added together. A new lot accuracy is then computed as in 3.7.6.7.3.1. above. This new accuracy is then compared with the acceptance/rejection levels related to the computed accuracy of the first sample.

3.7.7. Location Audit Reconciliation

3.7.7.1. This is a reconciliation by the ASDA and is a comparison of data in stock locator records submitted by the depot with these data in the accountable activity records. The audit is done to identify and correct situations where items are at the storage site but *not* recorded on accountable records, or recorded on the accountable records but *not* at the storage site. The audit also identifies mismatches in item catalog data, i.e., unit of issue, stock number, ownership code, manager, security/pilferable code, shelf life code, and inventory category code.

3.7.7.2. The minimum acceptable accuracy level for the location audit reconciliation is 95 percent.

3.7.7.3. Location record audit reconciliations must be accomplished as prescribed by AR 740-26 as an intergral part of the inventory reconciliation process. At CONUS depots, small arms custodial records will be matched with ASDA accountable records on a monthly basis.

3.7.7.4. DA Form 2510 (Storage Item Data Change Document) in the format detailed in appendix III-20 of AR 725-50 is used for the exchange of location audit data between the depot and the ASDA. The depot prepares a file of stock numbers by condition code representing stocks on hand. In oversea theaters this file is forwarded to the ASDA with document identifier BM5. In CONUS, this file is forwarded to the ASDA with document identifier BKB. The ASDA replies

best copy available

with a DA Form 2510, document identifier BM6, for each record which reflected differences in catalog data. (Document identifier BM3 is used to correct an erroneous inventory category code). Where there is a question of the proper catalog data element, the ASDA should contact the DARCOMCDO for reconciliation of data. In those cases where the ASDA has a stock number and condition code record but the depot did not forward a matching record, or where the depot forwards a stock number and condition code record and the ASDA has no matching record, special inventories will be required. These are then scheduled for an inventory in the same quarter in which the audit was accomplished.

3.7.7.5. The depot must make required catalog data element changes in location records, and, if necessary, at the location site.

3.7.7.6. If the ASDA indicates a reidentification action is necessary, this means they cannot determine what the item is. When the depot cannot resolve the problem, they must forward to the ASDA, additional data such as nomenclature, part number, manufacturers code, receipt document number, or other information to aid in further research.

3.7.7.7. The ASDA computes the location audit accuracy. Only one error per stock number record is to be charged for accuracy computation purposes. The location audit reconciliation results are furnished to the next higher headquarters, and is used in preparing the Inventory Control Effectiveness Report mentioned below. The depot also receives a copy of these results.

3.7.7.8. Both ASDA and depot audit procedures must include provisions for analyzing catalog data element errors. The impact of each type data element error will be included as a narrative supplement to audit feeder data furnished higher headquarters. The narrative supplement is also used in preparing the Inventory Control Effectiveness Report.

3.7.8. Reporting

A Report of Inventory Control Effectiveness recaps the overall inventory program. The report provides data on materiel denials, receipt processing, locator accuracy, inventory status, the physical inventory program, and physical inventory adjustment research. The report is prepared quarterly by the responsible command in accordance with appendix D, AR 740 26 and is based on feeder data submitted by subordinate activities.

APPENDIX

INVENTORY CATEGORY CODES*

Code	Title	Description
1	High value (non special interest)**	High and very high management intensity item as defined in AR 710-1 and principal and/or regulated items as defined in AR 310-25 or any combination of these except those items included in inventory category codes 0, 2, 3, 6, 7, and 8.
2	Controlled inventory (SIMS items which are sensitive, classified and/or pilferable).**	SIMS items which are pilferable, sensitive, or classified.
3	Controlled Inventory (pilferable)**	Items with physical security pilferage code of pilferage and not included in inventory category code 2 or 8.
4	Other service managed***	Items managed by other than Army and not assigned inventory category code 1, 2, 3, 6, 7, 8, or 9 by the Service Item Control Center (SICC).
5	Other (nonspecial interest)***	Items not included in any of the other inventory category codes.
6	High value (special interest)**	Items which qualify for inventory category code 1 but for which the accountable supply distribution activity has a special interest in identifying the items uniquely for inventory purposes.
7	Controlled inventory (SIMS)**	SIMS items which are not pilferable, sensitive, or classified.
8	Controlled inventory (classified and sensitive)**	Items, other than SIMS and small arms items, that are classified or sensitive.
9	Other (special interest)***	Items not included in inventory category codes 1, 2, 3, 4, 6, 7, or 8, but for which the accountable supply distribution activity has a special interest in identifying the items uniquely for inventory purposes.
0	Small arms items**	Items that are classified as small arms.

---

*These codes are used when grouping items of supply into lots segments for inventory purposes. Accountable depots and storage activities will record these codes on records for planning and scheduling inventory actions.

** Requires complete inventory annually.

*** May be sampled annually.

STOR

Section VIII. C

General
Purpose
Scope
Objectives
Policy
Responsibilities
Subsection I. Program Implementation, Budgeting, anc
Program Implementation
Budgeting
Reporting
II. Accountable Supply Distribution Activity
Introduction
Maintenance of preservation-packaging/p
*Issurance of minor repair and preservati
guidance for condition code E stocks
Issuance of preservation-packaging/packi
serviceable assets
*Processing time standards for minor rep
packing guidance
III General Supply Quality Control, Cyclic In
and Materiel Audits
Introduction
Policy
*Inspection records
Workload forecasting
Scheduling cyclic inspections
*Conducting cyclic inspections and period
IV. Preservation-Packaging/Packing, Minor I
General Supplies
Introduction
Workload forecasting
Scheduling workload
Workload accomplishment
V. Preservation-Packaging/Packing, and Mi
Introduction
Workload forecasting
Scheduling workload
Workload accomplishment
Appendix A. Care of Supplies in Storage Priority Codes
B. Instructions for Completion of DA Form 3

3.8.1. General

The instructions in this section apply to the
equipment and supplies stored by the Dep
of the Army. (See para 3.8.5.2 for policy on ot
vice or agency stocks.) DA Pam 310-4 (Index
nical Manuals, Technical Bulletins, Supply
(types, 7, 8, and 9), Supply Bulletins and
tion Orders) should be consulted for current
tions applicable to this manuals.

CHAPTER 3
GE PROCEDURES

RE OF SUPPLIES IN STORAGE

	Paragraph	Page
	3.8.1	38-1
	3.8.2	38-1
	3.8.3	38-2
	3.8.4	38-2
	3.8.5	38-2
	3.8.6	38-3
eporting		
	3.8.7	38-4
	3.8.8	38-4
	3.8.9	38-5
SDA) Support		38-5
	3.8.10	38-5
king data	3.8.11	38-5
-packaging/packing		
	3.8.12	38-5
guidance for		
	3.8.13	38-5
and preservation-packaging/		
	3.8.14	38-5
ection,		
		38-6
	3.8.15	38-6
	3.8.16	38-6
	3.8.17	38-6
	3.8.18	38-7
	3.8.19	38-7
materiel audits	3.8.20	38-8
pair and Exercising of		
		38-8
	3.8.21	38-8
	3.8.22	38-9
	3.8.23	38-10
	3.8.24	38-10
Repair of Ammunition		38-10
	3.8.25	38-10
	3.8.26	38-11
	3.8.27	38-11
	3.8.28	38-11
		38-15
1		38-17

are of
tment
r ser-
Tech-
nuals
brica-
blica-

3.8.2. Purpose

This section establishes the US Army Care of Supplies in Storage (COSIS) program. The program assures that the true condition of materiel is known; properly recorded; and that materiel is maintained in a condition to meet supply demands at a minimum cost in funds, manpower, facilities, equipment, and materials.

*3.8.3. Scope

The provisions of this section apply to the Deputy Chief of Staff for Logistics (DCSLOG); major Army commanders responsible for operation of Army Accountable Supply Distribution Activities (ASDA's), depots and depot activities in continental United States (CONUS) and oversea. Where there is conflict between the COSIS program requirements contained in this section and other publications, those contained herein will take precedence. Pending subsequent directives, GSU's and DSU's will establish a COSIS program as closely allied with these instructions as possible within unit capabilities.

3.8.4. Objectives

3.8.4.1. Maintain the Army materiel readiness posture in CONUS and oversea commands at an optimum level by providing uniform guidance for the development and execution of a COSIS program.

3.8.4.2. Establish the relationship of the COSIS program to the Army Management Structure fiscal codes.

3.8.4.3. Develop realistic workload forecast methods to determine and substantiate budget and manpower requirements.

**3.8.4.4.* Establish a program to assure that the true condition of materiel is known and recorded through scheduled cyclic inspections and tests and periodic audits of materiel in storage.

3.8.4.5. Provide controls to insure that only materiel representing current or anticipated supply system requirements is scheduled for processing.

3.8.4.6. Establish uniform criteria for development of realistic schedules to accomplish the COSIS program to assure that materiel is ready for issue.

**3.8.4.7.* Assure that preservation-packaging/packing of supplies and equipment is accomplished based on the level of protection requirements of AR 700-15 (Preservation-Packaging, Packing and Marking of Items of Supply).

3-8.5. Policy

3.8.5.1. Workload data submitted to substantiate budgetary requirements for the COSIS program will be based upon AR 37-100-Series (Army Management Structure (Fiscal Code).

3.8.5.2. Materiel owned by other services or agencies and stored by the Department of the Army will be provided the required care in accordance with the priorities established herein. Appropriate guidance, as required, to aid in this program will be accomplished by special agreement with the service or agency concerned.

**3.8.5.3.* Minor repair and adjustment under the COSIS program will not exceed the limits set forth herein. When repair and adjustment exceed these limits, the materiel will be reclassified to the appropriate unserviceable condition code and work accomplished through scheduled maintenance actions.

3.8.5.4. Receipts of procurement, and depot reconditioned materiel requiring a military packaging level of protection should be processed within 10 days to a military level of protection prior to placement in storage.

NOTE

> This provision applies to items procured without proper recognition of level of protection requirements. This does not imply that such procurement is an accepted course.

If preservation-packaging/packing cannot be accomplished at the time of receipt, the materiel will be classified to the appropriate condition code and scheduled for preservation-packaging/packing as prescribed herein.

**3.8.5.5.* Receipts of returned materiel i.e., retrograde or receipts from posts, camps, or stations, will be afforded limited preservation upon receipt to maintain in an as in condition.

**3.8.5.6.* General supply materiel in storage will be subjected to periodic inspections to detect materiel requiring corrective action. This allows materiel requiring corrective action to be included in preservation-packaging/packing, minor repair, maintenance, and modification programs. Performance of inspections and tests will be accomplished making optimum use of statistical sampling techniques consistent with the acceptable quality levels (AQL) prescribed by this section.

**3.8.5.7.* Instructions covering surveillance inspection of ammunition are provided in AR 740-1, SB 742-1 and TM 9-1300-206.

**3.8.5.8.* Shelf-life items will be inspected as prescribed by Storage Serviceability Standards, DODI 4140.27, and AR 700-89, and scheduled as prescribed by this section.

**3.8.5.9.* General supply unserviceable (condemned), excess and obsolete stocks will not be subjected to inspection or preservation-packaging/packing unless specifically directed by the ASDA or higher authority. (See 3.8.5.7. above for ammunition.)

3.8.5.10. Correction of preservation-packaging/

packing, minor repair deficiencies, exercising, remarking, and similar requirements will be accomplished in conjunction with scheduled COSIS functions. During these processes, each of the actions will be charged to the appropriate account as defined in AR 37-100 series.

3.8.5.11. Army CONUS and oversea ASDA's will furnish guidance by specific stock number to depots for minor repair and preservation, packaging, and packing (PP&P) of condition code E materiel and other materiel requiring these actions for issue or because of an unfavorable storage environment. For condition code E stocks, this guidance will automatically be provided. A request for guidance will be submitted to the ASDA for those other stocks a depot determines in need of minor repair or PP&P. ASDA guidance response will include:

3.8.5.11.1. The quantity of on-hand stocks which is authorized minor repair and PP&P. (This is that quantity of materiel reported by the depot as in need of minor repair or PP&P).

3.8.5.11.2. Priority guidance for that quantity of materiel which is authorized minor repair and PP&P.

3.8.5.12. Minor repair and PP&P under the COSIS program will not be accomplished prior to receipt of quantity and priority guidance from the ASDA. Exceptions to this requirement relative to PP&P are those items being received from procurement and rebuild. Such items by virtue of being in rebuild programs and procurement action are presumed to be required. (See para *3.8.5.5.* for returned materiel actions.)

3.8.5.13. General supply items in controlled humidity, general purpose warehouse, shed, and other covered or open storage facilities will be preserved-packaged to the required level of protection specified in AR 700-15. The level of packaging (except for materiel in reusable containers) will be as required to conform to the issue history of each individual depot unless a higher level of protection is required for storage purposes.

3.8.5.14. All ammunition items will be preserved-packaged/packed level A regardless of the type of facilities used for storage unless specific guidance to the contrary is furnished by the cognizant ASDA.

3.8.5.15. Condition code A project and contingency stocks identified by the ASDA excluding administratively earmarked stocks and those items requiring functional test prior to shipment, will be preserved-packaged/packed level A regardless of the type of storage.

3.8.5.16. Unserviceable, economically reparable materiel in storage authorized reconditioning action will be afforded sufficient preservation-packaging/packing or proper storage environment to maintain it in an as-is condition.

3.8.5.17. Materiel in storage which involves only limited expense or effort to restore to serviceable condition, and which is accomplished in the storage activity will be classified as condition code E. (Limited expense or effort is defined as that which is allowable for expenditure by the care and preservation activity under current policies.)

3.8.5.18. Materiel rendered unserviceable because of minor deterioration or damage qualifies for classification to condition code E provided restoration can be accomplished within the preservation and packaging fund limitation.

3.8.5.19. Skills and facilities will not be required by the storage activity to perform work beyond the scope of the COSIS program.

3.8.6. Responsibilities

3.8.6.1. The Deputy Chief of Staff for Logistics, (DALO-SMS-R) Department of the Army will:

3.8.6.1.1. Issue policy as deemed necessary for direction of the COSIS program.

3.8.6.1.2. Manage the COSIS program in coordination with the US Army major commanders.

3.8.6.1.3. Promulgate Department of Defense instructions relating to the care of supplies in storage.

3.8.6.1.4. Insure that resources are made available to US Army major commanders to adequately conduct the COSIS program.

3.8.6.1.5. When adequate resources cannot be made available as required under *3.8.6.1.4.* above, issue guidelines and instructions delineating appropriate action to be taken by major Army commanders.

3.8.6.2. Major Army commanders in CONUS and overseas responsible for operation of Army ASDA's, depots, and depot activities will:

3.8.6.2.1. Develop and install the COSIS program within the parameters delineated herein. The success of the COSIS program is dependent upon close, continuous coordination and cooperation among staff and operational elements responsible for programming and execution.

3.8.6.2.1.1. The responsibilities for executing a COSIS program are joint in nature in that they are shared by quality control, storage management, and inventory management functions. However, the storage management element at depots will be the focal point for coordination of the depot COSIS program.

3.8.6.2.2. Make recommendations to the Department of the Army for improvements in the COSIS program.

3.8.6.2.3. Identify and recognize in major command budget priorities the resources required to accomplish PP&P backlogs and take appropriate actions to acquire these resources.

3.8.6.2.4. Evaluate program execution to ascertain that materiel in storage is maintained in an issuable condition at a minimum cost.

3.8.6.2.5. When resources required to maintain materiel in storage cannot be made available as required under *3.8.6.1.4.* above, implement guidelines and instructions furnished as required under *3.8.6.1.5.* above, delineating appropriate actions to be taken by operational activities responsible for execution of the COSIS program.

3.8.6.3. The Commander, US Army Materiel Command (AMC), will in addition to responsibilities listed in *3.8.6.2.*:

3.8.6.3.1. Develop and issue commodity oriented technical instructions/storage serviceability standards (AR 740-1) related to cyclic inspection and the care of supplies in storage of Army materiel.

3.8.6.3.2. Provide technical assistance to other Army commands upon request in the development and execution of the COSIS program.

3.8.6.4. The commander of each Army depot will:

3.8.6.4.1. Establish, execute, and evaluate a COSIS program in accordance with the detailed implementing instructions of the appropriate headquarters to insure that materiel in storage is maintained in an optimum condition.

3.8.6.4.2. Program for and determine the adequacy of resources in terms of funds, manpower, facilities, materials, and equipment to perform the various COSIS functions.

3.8.6.4.3. Designate the storage management activity to be the focal point for coordination of the COSIS program.

3.8.6.4.4. Assign the quality control activity the responsibility for final determination of materiel placement into applicable workload priorities II and III. These workload priorities are defined in AR 740-1.

3.8.7. Program Implementation

3.8.7.1. For activities entering the scope of the COSIS program, the following implementing guidance will be followed:

3.8.7.1.1. The first phase will incorporate all implementing directives in appropriate functional regulations. Policies established herein apply to both manual and related automated operations. Procedural instructions herein apply to manual operations and provide the basis for defining automated procedures development. User procedures for standard automated systems, i.e., BASOPS, SPEEDEX, CS3, ALPHA, DSU/GSU, DLOGS, SAILS, MATCOM, and 3S, are contained in the procedural manuals for these systems. Changes to these ADP systems to incorporate changes required by this manual will be effective when broadcast by the assigned responsible agency (ARA); i.e., USACSC and AMC. These ARA's will implement required changes to automated systems as rapidly as possible consistent with availability of resources and other approved priorities. The provisions of AR 18-1 will be adhered to in the conversion of any portion of logistics operating systems to automated systems unless this requirement is waived by HQDA. Approved conversions will be accomplished within the framework of standard multisite and multicommand (class A) ADP systems.

3.8.7.1.2. The second phase will be inspections to identify on-hand stocks which require processing. This will be accomplished on a progressive basis. In addition, normal stock turnover will be relied on to bring stocks into the alinement prescribed herein. The time frame for this action will correspond to the time interval established between inspections for each type storage environment (table 1). *For example*, all items in outside storage with a 6-month cycle must be covered under this program within 6 months from the date of completion of the first phase. Any item in storage, however, must use the date of the last inspection as the base for accomplishing this action.

3.8.8. Budgeting

3.8.8.1. Budgeting for the COSIS program requires utilization of those account codes within the Army management structure which cover functions of the program (AR 37-100 series).

3.8.8.2. All functions of the program fall within the overall account 721111, supply depot operations, and specifically within the subaccount of 721111.1, storage and warehousing.

3.8.8.3. For individual functions the following fiscal codes apply:

3.8.8.3.1. Packing for storage, 721111.12120.

3.8.8.3.2. Care of materiel in storage, 721111.13100.

3.8.8.3.3. Preservation-packinging, storage, 721111.13320.

3.8.8.3.4. Cyclic inspection, 721111.14320

3.8.8.3.5. Container assy and mfgr (for storage only) 721111.13400.

3.8.8.4. All of the processes and tasks specified in AR 37-100-Series for each of the codes listed above apply to the COSIS program with the following exceptions and additions:

3.8.8.4.1. For code 721111.13100 only the processes and tasks in exercising mechanical devices and in minor repair apply.

3.8.8.4.2. When developing COSIS budget requirements or preparing COSIS cost reports, contractual costs and/or reimbursements to or from other activities performing or authorizing COSIS PP&P actions must be recognized. Where these costs or reimbursements are not included in the above fiscal code cost totals, they will be shown in COSIS budget data or COSIS cost reports as a memo entry.

3.8.8.5. Frequency of budget submission and its final form and content will conform to that prescribed in budget and program guidance.

3.8.9. Reporting

Effective 1 July 1974 reporting of cost and performance will be accomplished as prescribed by AR 740-1.

Subsection II. ACCOUNTABLE SUPPLY DISTRIBUTION ACTIVITY (ASDA) SUPPORT

3.8.10. Introduction

The ASDA has a significant role in the orderly, economical execution of the COSIS program. To successfully accomplish this task, it is essential that timely and accurate information be provided those activities actually involved in the physical processing action. This section specifies what is to be accomplished.

3.8.11. Maintenance of Preservation Packaging/Packing Data

3.8.11.1. ASDA's will maintain controls to insure that issue history is maintained on level of protection requirements by stock number. This information will consist of the percentage of assets required for issue by packaging levels of protection (A, B, and C). Such data will be used to select the level of protection requirements at time of procurement and determination of distribution. Stocks procured with varying levels of protection will have those levels predicated on the issue history requirements of the depots at which the materiel is to be stored.

3.8.11.2. ASDA's will establish necessary controls to inform storage installations when stocks become excess or obsolete. This will prevent the unnecessary expenditure of funds for stocks which are no longer required. In addition, controls will be established to update previously provided minor repair and PP&P guidance whenever supply status changes affect this guidance.

3.8.12. Issuance of Minor Repair and Preservation-Packaging/Packing Guidance for Condition Code E Stocks

When depots report an item in condition code E, ASDA's will automatically provide minor repair and PP&P guidance. This guidance will consist of the quantity of that materiel reported in condition code E which is authorized minor repair and PP&P. In addition, the recommended priority for these minor repair and PP&P actions will be provided as part of the guidance (see app. A). This priority will be predicated on when the ASDA anticipates the assets will be needed for issue. Such determination will be accomplished by reviewing supply studies and other available data to establish issue requirements by stock number. If no requirement exists in the supply system, disposal instructions will be issued by ASDA's in accordance with existing procedures.

3.8.13. Issuance of Preservation-Packaging/Packing Guidance for Serviceable Assets

Depots will periodically assess all serviceable stocks to establish if upgrading the level of protection is required. This upgrading requirement could result from unfavorable storage environment or from the need to raise the existing level of protection to meet future level of protection requirements at time of issue. When the specific stock numbered items and the quantity are determined by the depots, depots will request guidance by stock number, quantity and condition from the ASDA. As in the case of condition code E (para *3.8.12.*) priority guidance will be determined and furnished by the ASDA to the depot by stock number, quantity, and condition (see app. A).

3.8.1.4. Processing Time Standards for Minor Repair and Preservation-Packaging/Packing Guidance

Minor repair and preservation-packaging and packing priority and quantity guidance will be provided within 5 work days for priority 1 items (app. A) and 20 work days for all other priorities after a depot reports a condition code E asset or requests guidance on other materiel.

Subsection III. GENERAL SUPPLY QUALITY CONTROL, CYCLIC INSPECTION, AND MATERIEL AUDITS.

3.8.15. Introduction

Periodic inspections must be accomplished on materiel in storage to detect materiel degradation, corrosion, and other deficiencies caused by improper storage methods, extended periods of storage, or the inherent deteriorative characteristic of the materiel. This is accomplished by regularly scheduled cyclic inspections for high-risk items, or by general surveillance type of inspection (materiel audits) for low risk items (para *3.8.19.4*). This action identifies those stocks which require corrective packaging and packing to maintain the materiel in serviceable condition. It also identifies stocks which are no longer serviceable. Depending on the complexity of the item, cyclic inspection can require the coordinated efforts of inspection, storage and maintenance personnel and their respective facilities.

3.8.16. Policy

3.8.16.1. Primary emphasis for performing cyclical inspections will be placed on priority group I materiel and those priority group II materiel stored in unfavorable storage conditions (ref SB 740-1). Priority group II materiel in favorable storage conditions will normally be subjected to an annual audit by a walk-through inspection of storage areas observing each location to detect obvious deficiencies by visual means. Referral of specific items for more extensive inspection (or tests) will be accomplished when the quality of the materiel is questionable based on considerations outlined in paragraph *3.8.20.1.*

3.8.16.2. The cyclic inspection frequency for priority group I materiel will be that specified in the applicable storage serviceability standards (SSS), or as designated in other guidance from the commodity manager. Local adjustments to intervals for cyclical inspection of priority group I (except shelf life, type I) are permitted up to one-fourth those specified in SSS or other publications; greater adjustments will not be made without prior written approval of the ASDA and/or cognizant inventory manager. Adjustments to specified intervals will not be accomplished arbitrarily but will be based on verifiable data to include analysis of inspection results, processing conditions, environmental conditions, and other influencing factors.

3.8.16.3. Shelf life items will be inspected/tested at intervals indicated by the assigned shelf life code. Shelf life items will be controlled to the degree required to insure that the condition code reflected at the storage location and in the accountable record is accurate at all times. Data accumulated as a result of inspection or tests, which indicate an unrealistic code assignment will be directed to the inventory manager/or the appropriate major subordinate command for evaluation (AR 700-89). Information, thus furnished, will be used as a basis for extension, reduction, or deletion of age control requirements.

3.8.16.4. Cyclical inspection will be performed by statistical sampling methods based on MIL-STD 105 (sampling procedures and table for inspection by attributes) unless otherwise provided by the applicable SSS or other technical publications. For materiel with a satisfactory history, as determined by analysis of quality control data, reduced levels of inspection other than that specified in the SSS and the applicable documents may be used.

3.8.16.5. An AQL of 2.5 will be applied when the AQL is not furnished in a SSS or other guidance from the commodity manager.

3.8.16.6. The results of quality data generated from analysis of inspection of items during shipping, set assembly, special inspection directed by the item manager, customer complaints, and other quality feedback information will be used to supplement the cyclical inspections and audits results to evaluate the adequancy of the COSIS program.

3.8.17. Inspection Records

3.8.17.1. Records of inspections will be maintained at all depot and depot activities to effectively schedule and accomplish actions required herein. These records will be maintained mechanically where possible. Where this cannot be accomplished, standard, manually prepared forms will be used. To the maximum extent practicable the information and data elements required for inspections will be integrated with storage data required for performance of the storage mission. As a minimum, this information will consist of the date of the last inspection and information required to determine applicable priority and frequency as established by paragraph *3.8.19.2.* Records of inspections performed will be established by stock location. Data will be maintained current through rewarehousing actions and until such time as the location is deleted due to the stock being exhausted.

3.8.17.2. Inspection results will be recorded, analyzed, summarized, and furnished to the organization responsible for corrective/preventive action. Inspection results will be used to determine trends, errors, and improper storage practices contributing to materiel deficiencies. Actions will be directed to eliminating the cause of deficiencies in order to prevent recurrence of like or similar deficiencies.

3.8.17.3. To facilitate the maintenance of records and the proper identification of defects, quality defect codes will be developed and standardized. These codes will be sufficiently definitive to allow production planners to determine processes required to take corrective action.

•*3.8.17.4.* The results of quality data generated from the analysis of inspections and tests of items will be made available to the responsible inventory manager on an is required basis for the improvement of technical instructions and standards related to the COSIS program (paras 3.8.16.2, 3.8.16.3, and 3.8.16.6).

3.8.18. Workload Forecasting

3.8.18.1. Workload forecasts will be developed to aid the budgetary process and allow for planning. Forecasts will include that workload on hand requiring cyclical inspection and that expected to generate during the budgetary period. Forecasted receipts which will require cyclic inspection during the period must be included. The forecast should also reflect the workload according to the priority in which it must be accomplished.

3.8.18.2. Forecasts will be expressed in production units required for work measurement, budgeting and reporting. The frequency of preparation should coincide with the budget program. Normally, this is on a quarterly basis.

3.8.18.3. Method and format of forecast preparation is the option of the CONUS and oversea commander.

3.8.19. Scheduling Cyclic Inspections

•*3.8.19.1.* The schedule for cyclic inspection is based on the inspection frequency specified in SSS or other guidance furnished by the commodity manager. Changes to required inspection frequencies may be made locally. Refer to paragraph 3.8.16.2. for policy. A request for change submitted to the preparing activity must be accompanied by supporting data.

•*3.8.19.2.* For items in inspection priority group I and those inspection priority group II items in unfavorable storage, if an SSS designating a specific time frame does not exist, the intervals between inspections specified by Table I will apply. These intervals may be adjusted locally for subsequent inspections. Adjustments to specified intervals will be based on factual data to include analysis of initial inspection results, processing conditions, and other influencing factors. Priority group II items without an SSS stored in favorable storage conditions will be inspected annually as described in paragraph 3.8.16.1. The term "favorable storage" is defined to mean that type of storage prescribed in SB 740-1. "Unfavorable storage" is any type storage not authorized by SB 740-1.

Table 1

Type Storage	*Interval (months)*
Controlled humidity (or equivalent when such rating has been approved by higher authority)	60
•Controlled temperature warehouse	30
•Noncontrolled temperature warehouse	24
Shed	12
Open	6

•*3.8.19.3.* When level of protection and packaging method result in protection equivalent to a more favorable storage environment than that in which the materiel is stored, e.g., method II stored in general purpose space, the inspection interval may be adjusted to the interval specified for the more favorable storage environment (Table 1).

Note: This does not pertain to shelf-life items.

•*3.8.19.4.* During accomplishment of the cyclic inspection program, conditions may arise that result in slippage of the cyclic inspection schedule. To assure that available inspection effort is applied to those areas of a critical nature, schedules will be established considering type of storage and the following priorities:

Priority groups	*Explanation*
I	*High Risk Items*
A	Shelf life items (Items with an assigned shelf life). Applies to Condition Code A, B, C, D, E, and G.
B	Contingency Reserve Stock, Pick, Pack, Mark and Hold Items only. Applies to Condition Code A.
C	Regulated and Principal Items (AMDF special control item codes 1, 2 and 4.) Applies to Condition Codes A, B, C, D, E, and G.
II	*Low Risk Items*
A	Serviceable bulk stocks (other than the above categories). Applied to Condition Code A, B, C, and D.
B	Serviceable loose issue stocks (Other than the above categories). Applies to Condition Codes A, B, C, and D.
C	Unserviceable stocks. Applies to Condition Code E, F, and G.

Priority Group I — All items will be scheduled for cyclic inspection in accordance with commodity command SSS's.

Priority Group II — Scheduled cyclic inspection will be performed on only those serviceable bulk stock stored in unfavorable storage conditions (Ref SB 740-1). All other materiel in this group will be subjected to periodic materiel audit inspections.

*3.8.20. Conducting Cyclic Inspections and Periodic Materiel Audits

**3.8.20.1.* *Cyclic inspection will be accomplished on all priority group I, as well as priority group IIA materiel in unfavorable storage, according to the priority assigned in the schedule, and to the extent that resources are provided for this purpose. All other materiel will receive periodic audit type inspections normally consisting of visual inspections to detect deterioration in storage. More extensive inspections/tests should be performed based on analysis of such inspection results, or when there is reason to question the quality of materiel based on extended period of storage, shipping inspection results, customer complaints, past quality history, or when instructed by the ASDA.

3.8.20.2. The criteria established for serviceability in SSS will be used for cyclic inspections.

3.8.20.3. In the absence of SSS, inspection of materiel in storage will normally be limited to visual examination for correctness of identity, condition, completeness, deterioration, preservation-packaging/packing, marking and other visual characteristics as applicable. Testing of materiel will be predicated on the results of such examination and will be accomplished on a stock number basis.

3.8.20.4. Materiel in storage requiring testing, preservation-packaging/packing, minor repair, or modification, will be reclassified, if appropriate.

3.8.20.5. Materiel in locations selected for inspection will be inspected on a sampling basis to the extent such materiel is considered homogeneous. Sampling plans reflected in MIL-STD-105 will be utilized when sampling techniques are employed. Materiel found defective as a result of sampling inspection will be reported in the appropriate condition code to the responsible activity for action.

**3.8.20.6.* Inspected materiel will be marked with appropriate inspection markings. Marking normally will consist of activity designation, inspector's number and date of inspection. Authorized inspection stamps will be used for this purpose. Inspection markings will be applied to the item, tags, labels, or containers as appropriate. When sampling methods are utilized, evidence of inspection will only be affixed to those items or containers actually inspected (except shelf-life items). However, internal shipment preparation procedures should assure that for materiel involved in these sampling methods, the evidence of inspection is perpetuated onto all applicable containers at time of shipment. This will enable the receiving installation to readily assess inspection requirements for these items and thereby avoid the unnecessary expenditure of resources. Immediate use shipments (issue priority designators (PID) 01 through 08 less IPD 06) and shipments addressed to other than a depot type storage activity are exempt from application of inspection evidence.

3.8.20.7. Minor adjustments incidental may be accomplished by inspection personnel during the course of cyclic inspection.

Subsection IV. PRESERVATION-PACKAGING/PACKING, MINOR REPAIR, AND EXERCISING OF GENERAL SUPPLIES

3.8.21. Introduction

This portion of the COSIS program encompasses the policies and procedures for the depot and depot activity accomplishment of preservation-packaging/packing, minor repair, and exercising actions. These actions include the following:

**3.8.21.1.* Cleaning, .preserving, packaging, packing, application of markings, replacement of parts, and otherwise correcting minor deficiencies in serviceable or unserviceable materiel stored or being prepared for shipment.

**3.8.21.2.* Performing required preservation-packaging/packing for storage of serviceable materiel rehabilitated in depot maintenance operations or received from procurement or other sources.

**3.8.21.3.* Accomplishing preservation-packaging/packing of general supplies for storage in accordance with directives established or approved by cognizant ASDA. Materiel packaged and packed level C is suitable for storage in controlled humidity storage facilities. Upgrading the level of protection, if required, can be done at time of issue. When shipping needs are known or can be projected in advance, processing will be accomplished in quantities to achieve maximum economy.

**3.8.21.4.* Avoiding excessive or unnecessary packaging and packing for storage or shipment (AR 746-1). Supplies will be afforded the level of protection contained in AR 700-15 unless specific guidance exists to the contrary. If the only remaining issuable stocks in storage have been afforded a higher level of protection than is expected to be required for a shipment, they will not be repackaged.

3.8.21.5. Repackaging or repacking of stored materiel according to requirements for end use so that the most economical level of protection is used. Materiel with unknown supply requirements in need of immediate protection should be provided a military level of preservation-packaging/packing consistent with existing issue or storage requirements.

•*3.8.21.6.* Accomplishing minor repair or adjustments (Minor repair or adjustment does not pertain to preservation-packaging/packing and marking). These actions will be accomplished in accordance with the limitations in AMS fiscal codes in AR 37-100-Series.

3.8.21.6.1. When minor repair or adjustment exceeds these limitations, the item will be reclassified to an appropriate condition code and the necessary repair accomplished through scheduled maintenance action.

3.8.21.6.2. Minor repair and adjustment accomplished on a reimburseable basis will be subject to the same limitations listed above. In addition, when the cumulative total expenditure for reimbursable minor repair and adjustment exceeds 5 percent of the total resources programmed for the minor repair and adjustment function, special notification will be made to the appropriate higher headquarters explaining in detail the extent of manpower diversion for this purpose. Such limitation is necessary to protect manpower already programmed for an existing backlog.

3.8.22. Workload Forecasting

3.8.22.1. Workload forecasts will be prepared on an annual basis and will be updated quarterly. Requirements and required data at each depot and depot activity to accomplish this task are as follows:

3.8.22.1.1. Historical data on shipments for each item of supply actually in storage reflecting percentage distribution requirements at time of shipment for levels of protection A, B, and C. (This represents a cumulative record in which each shipment would be tabulated in terms of the level of protection the materiel required. Such data would be available at all times for the program. The percentage distribution between levels would then be computed from this tabulation.)

3.8.22.1.2. Identification on record and segregation in storage of serviceable materiel with level C protection.

NOTE

This means that all serviceable level C packaged materiel must be stored separately from serviceable level A and B packaged materiel which can be stored in the same location.

Records must also reflect the quantity of materiel which is packaged level C.

3.8.22.1.3. Identification on record of the type storage afforded each item of supply.

3.8.22.1.4. Quality history records as established in paragraphs 3.8.17.

3.8.22.1.5. ASDA receiving, issue, rebuild, set assembly, and basic issue item assembly and disassembly forecasts.

3.8.22.1.6. ASDA processing authority for condition code E assets. Such data will be provided automatically when condition code E assets are reported.

3.8.22.1.7. ASDA processing authority for serviceable assets requiring upgrading of levels of protection because of unfavorable storage environment. These data will be provided by the ASDA upon request by the depot or depot activity.

3.8.22.1.8. ASDA processing authority for assets other than condition code E requiring upgrading of levels of protection for issue. These data will be provided by the ASDA upon request by the depot or depot activity.

3.8.22.1.9. Special agreements with other services or agencies, as required.

3.8.22.2. Upon completion of workload determination, proper forecasting requires that actual processes or tasks be identified for each item in the workload. These actions are identified as follows:

•*3.8.22.2.1.* Packing for Storage, 721111.12120.

3.8.22.2.1.1. Packing.

3.8.22.2.1.2. Marking.

•*3.8.22.2.2.* Care of Material in Storage, 72111.13100.

3.8.22.2.2.1. Minor repair and adjustment.

3.8.22.2.2.2. Exercising.

•*3.8.22.2.3.* Preservation-Packaging, 72111.13320.

3.8.22.2.3.1. Cleaning.

3.8.22.2.3.2. Drying.

3.8.22.2.3.3. Preservation.

3.8.22.2.3.4. Packaging.

3.8.22.2.3.5. Marking.

3.8.22.2.4. Container Assy and Mfgr (For Storage only) 721111.13400.

3.8.22.3. Each of the above processes or tasks must have a unit of production. Therefore, each process or task will reflect the total number of units for the projected workload. The man-hour requirements are obtained by applying the standard time for the process or task involved to the projected total number of units which must be produced. Total requirements for the function are merely the summation of requirements for each of the processes.

NOTE

> The order of precedence for use of time standards is engineered, statistical and technical estimate.

3.8.22.4. Actual computation of requirements can be accomplished manually when quantity is not too great. To aid in this procedure, a suggested worksheet is provided in figure 1. When quantity dictates, such procedure should be adapted to mechanical preparation.

3.8.22.5. Presentation of workload forecasts will be in the following commodity groups:

FSG/FSC	*Commodity groups*
10	Weapons
12	Fire control equipment
11	Nuclear weapons and components
13/14	Missile
13	Conventional ammunition
13	Chemical, Biological, Radiological (CBR) materiel
15, 16, 17	Aircraft and accessories and components
19	Ships, small craft, pontoons, and docks
22	Rail equipment
2350	Combat vehicles
Other 23	Vehicles
24	Tractors
38	Construction equipment
5420	Bridging
Other 54	Prefabricated structures and scaffolding
58, 59	Electronics and communication equipment
Other Federal stock class	Miscellaneous

**3.8.22.6.* Items requiring preservation-packaging /packing, minor repair, or exercising will be placed by the depot or depot activity in one of the priorities shown in appendix A considering ASDA guidance (paras 3.8.12, 3.8.13 and 3.8.14) and each of the factors enumerated within each priority.

3.8.23. Scheduling Workload

3.8.23.1. Unlike forecasts which include both on-hand and anticipated workload, a schedule must depict known workload. In addition, a schedule must consider the availability of resources to complete the required tasks. Accordingly, an order of priority must prevail for scheduling materiel.

3.8.23.2. The order of priority for workload accomplishment will follow the priorities as established in appendix A. For each operational area, e.g., heavy pack, small items packaging, the schedule will show each item requiring action in priority order. This will continue until available resources in each operational area are fully committed for the period covered by the schedule.

3.8.23.3. Schedules will reflect the known workload. The current schedule will reflect a breakout corresponding to a time period which will result in minimum schedule change. Schedules will be updated as frequently as required to maintain pace with workload and priority changes.

3.8.23.4. The minimum information which must be reflected on each schedule is as follows:

3.8.23.4.1. Federal stock number.

3.8.23.4.2. Nomenclature.

3.8.23.4.3. Condition classification.

3.8.23.4.4. Priority.

3.8.23.4.5. Processing actions required.

3.8.23.4.6. Man-hours required to accomplish processing actions.

3.8.23.4.7. Quantity to be processed.

3.8.23.5. Preparation of schedules will be accomplished mechanically when possible. Where normal workload is insufficient to justify necessary mechanical equipment, manual preparation will be accomplished.

3.8.24. Workload Accomplishment

**3.8.24.1.* Accomplishment of the workload reflected on the schedule will be controlled through DA Form 3581 (Care of Supplies in Storage Work Order). DA Form 3581 may be completed manually, by typewriter, or by automated equipment (fig. 2) DA Form 3581 is available through normal AG publications supply channels.

**3.8.24.2.* All actions related to movement, in process control, and reporting will be accomplished utilizing DA Form 3581. Explanation of form entries and data sources for these entries are shown in appendix B.

Subsection V. PRESERVATION-PACKAGING/PACKING, AND MINOR REPAIR OF AMMUNITION

*3.8.25. Introduction

This portion of the COSIS Program encompasses the policies and procedures for the depot activity accomplishment of preservation-packaging/packing and minor repair actions. The actions cited in paragraph 3.8.21.1. apply equally to ammunition items of supply. The following additional actions are ammunition peculiar:

**3.8.25.1.* Declipping and reclipping, delinking and relinking, and changing ratio linkage of small arms ammunition cartridges.

3.8.25.2. Accomplishing preservation-packaging/packing of ammunition for storage. Unless specific guidance to the contrary is furnished by the cognizant ASDA all ammunition items will be afforded level A protection.

3.8.26. Workload Forecasting

3.8.26.1. Workload forecasts will be prepared on annual basis and will be updated quarterly. The requirements cited in paragraph 3.8.22.1.6. apply equally to ammunition items of supply in accomplishing this task. The following additional requirements and required data are ammunition peculiar:

3.8.26.1.1. Surveillance inspection reports.

3.8.26.1.2. ASDA receiving, shipping, and set assembly forecasts.

3.8.26.2. Upon completion of workload determination, proper forecasting requires that actual processes or tasks be identified for each item in the workload. The actions cited in paragraphs 3.8.22.2.1. through 3.8.22.2.3. (excluding (3.8.22.2.2.) apply equally to ammunition items. The following action is peculiar to ammunition:

3.8.26.2.1. Clipping and linking.

3.8.26.3. The requirements cited in paragraphs 3.8.22.3 through 3.8.22.5 apply equally to ammunition items of supply.

•*3.8.26.4.* Ammunition items for Department of the Army use only, which require preservation-packaging/packing and minor repair, will be placed in the appropriate priority shown in appendix A.

3.8.27. Scheduling Workload

The requirements cited in paragraphs 3.8.23.1 through 3.8.23.5 apply equally to ammunition items of supply.

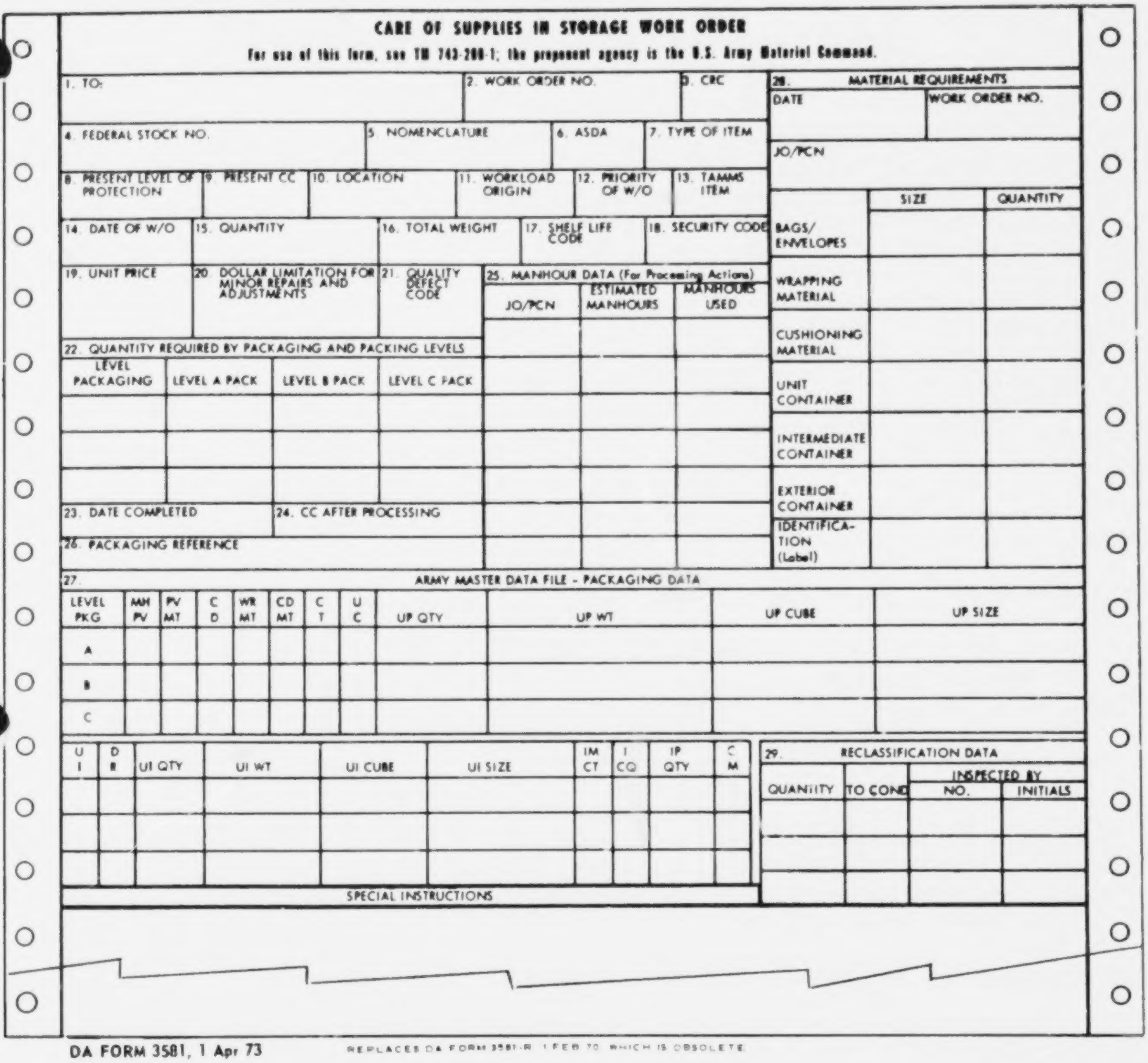
3.8.28. Workload Accomplishment

The requirements cited in paragraphs 3.8.24.1 and 3.8.24.2 apply equally to ammunition items of supply.

	Short tons		Care of Material in storage 721111.13100		Preservation and packaging - 721111.13200					Packing - 721111.13300			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Workload source	Forecast	On-hand	Minor repair (pieces)	Exercising turning mat'l (pieces)	Cleaning (pieces)	Preservation (pieces)	Packaging (packages)	Marking only (Packages)	Clipping/linking (packages)	on-line (packs)	off-line (packs)	Marking only (packs)	Total tons Columns 1 and 2
Receipts													
Procurement													
Returns													
Inter-depot transfer													
Rebuild													
Unit and set assy/dis-assy													
Storage													
Cyclic inspection													
Total													
Man-hours required to perform processing actions (determined by applying standard times to units processed)													
	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)
Receipts													
Procurement													
Returns													
Inter-depot transfer													
Rebuild													
Unit and set assy/dis-assy													
Storage													
Cyclic inspection													
Total													

Note: Container assembly and mfgr (13400) man-hours and materiel required for materiel in/for Storage will also be included in forecasting computations.

Figure 1. Care of supplies in storage — workload data — Federal supply group ------FY ------.



CARE OF SUPPLIES IN STORAGE WORK ORDER

For use of this form, see TM 743-200-1; the proponent agency is the U.S. Army Materiel Command.

1. TO:
2. WORK ORDER NO.
3. CRC
4. FEDERAL STOCK NO.
5. NOMENCLATURE
6. ASDA
7. TYPE OF ITEM
8. PRESENT LEVEL OF PROTECTION
9. PRESENT CC
10. LOCATION
11. WORKLOAD ORIGIN
12. PRIORITY OF W/O
13. TAMMS ITEM
14. DATE OF W/O
15. QUANTITY
16. TOTAL WEIGHT
17. SHELF LIFE CODE
18. SECURITY CODE
19. UNIT PRICE
20. DOLLAR LIMITATION FOR MINOR REPAIRS AND ADJUSTMENTS
21. QUALITY DEFECT CODE

22. QUANTITY REQUIRED BY PACKAGING AND PACKING LEVELS

LEVEL PACKAGING	LEVEL A PACK	LEVEL B PACK	LEVEL C PACK

23. DATE COMPLETED
24. CC AFTER PROCESSING

25. MANHOUR DATA (For Processing Actions)

JO/PCN	ESTIMATED MANHOURS	MANHOURS USED

26. PACKAGING REFERENCE

27. ARMY MASTER DATA FILE - PACKAGING DATA

LEVEL PKG	MH PV	PV MT	C D	WR MT	CD MT	C T	U C	UP QTY	UP WT	UP CUBE	UP SIZE
A											
B											
C											

U I	D R	UI QTY	UI WT	UI CUBE	UI SIZE	IM CT	I CQ	IP QTY	C M

28. MATERIAL REQUIREMENTS

DATE
WORK ORDER NO.
JO/PCN

	SIZE	QUANTITY
BAGS/ ENVELOPES		
WRAPPING MATERIAL		
CUSHIONING MATERIAL		
UNIT CONTAINER		
INTERMEDIATE CONTAINER		
EXTERIOR CONTAINER		
IDENTIFICATION (Label)		

29. RECLASSIFICATION DATA

QUANTITY	TO COND	INSPECTED BY	
		NO.	INITIALS

SPECIAL INSTRUCTIONS

DA FORM 3581, 1 Apr 73 REPLACES DA FORM 3581-R, 1 FEB 70, WHICH IS OBSOLETE.

Figure 2

APPENDIX A
CARE OF SUPPLIES IN STORAGE PRIORITY CODES

Code priority **General Supplies*	*Using activities*	*Explanation*
1	ASDA/storage depot	Materiel required in support of next 30-day shipping demand.
2	ASDA/storage depot	Materiel administratively or physically earmarked for theater reserves and contingency plans. This includes materiel held for active Army-unit-owned stock being held by the storage activity for emergency use.
3	Storage depot	Materiel received from depot maintenance operations over and above those quantities required for priorities 1 and 2.
4	Storage depot	Materiel received from procurement over and above those quantities required for priorities 1 and 2.
5		Condition code E materiel and serviceable materiel which needs processing prior to issue.
	ASDA/storage depot	a. Materiel required to support 30-180 day shipping demand.
	Storage depot	b. Storage is unfavorable.
	Storage depot	c. Deterioration is expected if processing is deferred.
6		Condition code E materiel and serviceable materiel which needs processing prior to issue.
	ASDA/storage depot	a. Materiel required to support shipping demand beyond next 180 days.
	Storage depot	b. Storage is unfavorable.
	Storage depot	c. Deterioration is expected if processing is deferred.
7	Storage depot	Unserviceable, economically reparable materiel which needs processing to maintain in an "as is" condition.
8	Storage depot	Condition code E materiel and materiel which needs processing prior to use. Represents ASDA priority 5 where: a. Storage is favorable. b. Deterioration is not expected if processing is deferred until issue.
9	Storage depot	Condition code E materiel and materiel which needs processing prior to use. Represents ASDA priority 6 where: a. Storage is favorable. b. Deterioration is not expected if processing is deferred until issue.
0	ASDA/storage depot	Scheduling not authorized.
**Army Owned Conventional Ammunition:*		
1		Required immediately (normally within 30 days). (Automatic scheduling authorized by Depots).
2		Required within next 12 months. (Automatic scheduling authorized by Depots).
5		Required for supply requirements, but not within next 12 months. (Automatic scheduling authorized by Depots).
6		Items for which no shortage exists, but which are not being considered for excessing. (Automatic scheduling authorized by Depots).
0		Items excess to computed requirements and/or those items directed by the NICP for retention without maintenance or Preservation and Packaging.

NOTE

The determination of favorable versus unfavorable storage as it related to level of protection will be accomplished using AR 700-15. Where the level of packaging protection is less than that specified for the storage environment, the item will be considered to be in unfavorable storage. Further, where the item protection has broken down and the storage environment does not adequately protect the item under those conditions, the item will be considered as in unfavorable storage even though the original packaging level applied conforms to that specified in AR 700-15.

APPENDIX B
INSTRUCTIONS FOR COMPLETION OF DA FORM 3581

Block	*Explanation*	*Data Source*
1	Enter applicable activity	Local determination
2	Enter applicable work order number	Local determination
3	Enter contingency reserve code	Depot Master Item Data File
4	Enter applicable federal stock number	Self-explanatory
5	Enter nomenclature of item	Army Master Data File or supply catalog as necessary
6	Enter applicable accountable supply distribution activity	Depot Master Item Data File
7	Enter according to grouping shown in paragraph 3.8.22.5	Depot Master Item Data File
8	Enter present level of packaging	Depot Master Item Data File
9	Enter present condition code of materiel	Depot Master Item Data File
10	Enter storage location of materiel	Stock location record
11	Enter inspection work source (Receiving, cyclical inspection, etc.)	Inspection record
*12	Enter priority code of work order	See appendix A chapter 3, section VIII
13	Enter "yes" if Army maintenance management system item. Enter "no" if not (ref TM 38-750)	Depot Master Item Data File
14	Enter single digit year and three digit Julian date	Date of work order preparation
15	Enter quantity of stock number to be worked	Local determination
16	Enter total weight in pounds of items to be worked	Local determination
17	Enter single character shelf life code	Depot Master Item Data File
18	Enter single character physical security code	Depot Master Item Data File
19	Enter item unit price	Depot Master Item Data File
20	Enter dollar limitation	Determination based on para 3.8.21.6
21	Enter applicable quality defect code	Inspection record locally developed
22	Enter quantities to be packaged/packed to require levels	ASDA guidance or depot issue histories
23	Enter date required work is completed	Local determination
24	Enter materiel condition code after work completion	Local inspector
25	Enter job order or production control number for processing actions; enter estimated and actual manhours for processing actions	Locally assigned JO/PCN, local standards, and actual in process records
26	Enter applicable packaging reference	Army Master Date File
27	Enter for applicable packaging level	All AR 708 1
MH	Method of preservation (2 pos)	
PV		
PV	Preservation material (2 pos)	
MT		
C	Cleaning and drying procedure (1 pos)	
D		

WR MT	Wrapping material (2 pos)	
CD MT	Cushioning and dunnage material (2 pos)	
C T	Cushioning thickness (1 pos)	
U C	Unit container (2 pos)	
UP QTY	Unit package quantity (3 pos)	
UP WT	Unit package weight (6 pos)	
UP CUBE	Unit package cube (5 pos)	
UP SIZE	Unit package size (12 pos)	
U I	Unit of issue (2 pos)	
D R	Data reference (2 pos)	
UI QTY	Unit of issue quantity (3 pos)	
UI WT	Unit of issue weight (6 pos)	
UI CUBE	Unit of issue cube (5 pos)	
UI SIZE	Unit of issue size (12 pos)	
IM CT	Intermediate container (2 pos)	
I CQ	Intermediate container quantity (1 pos)	
IP QTY	Intermediate package quantity (3 pos)	
C M	Class manager (1 pos)	
*Note.	Code interpretation - MIL-STD-726	
28	Self explanatory	Local determination
29	Enter quantity reclassified	Local inspector
	Enter reclassified condition	Local inspector
	Enter inspector's number	Local inspector
	Enter inspector's initials	Local inspector

CHAPTER 3

STORAGE PROCEDURES

Section IX. LOOSE ISSUE REPLENISHMENT

	Paragraph	Page
Introduction	3.9.1.	39–1
Replenishment criteria	3.9.2.	39–1
Replenishment form	3.9.3.	39–1
Processing the replenishment action	3.9.4.	39–2
Processing the replenishment action in bulk areas	3.9.5.	39–3
Completion of the replenishment action	3.9.6.	39–3

3.9.1. Introduction

Centrally located loose issue areas provide a means of supplying small quantity demands. Loose issue stockage utilizing bin, shelf, and rack storage aids will be maintained as required by replenishment action. A necessary part of this operation is a proper layout which maintains optimum balance between frequency of replenishment and frequency of demands. This can be achieved by selecting bin, shelf, or rack locations of sufficient size to accommodate adequate portions of the items available for issue. Though this will increase the overall size of the loose issue area, recent improvements in stock selection equipment and materials handling systems more than offset the additional travel associated with the larger area.

3.9.2. Replenishment Criteria

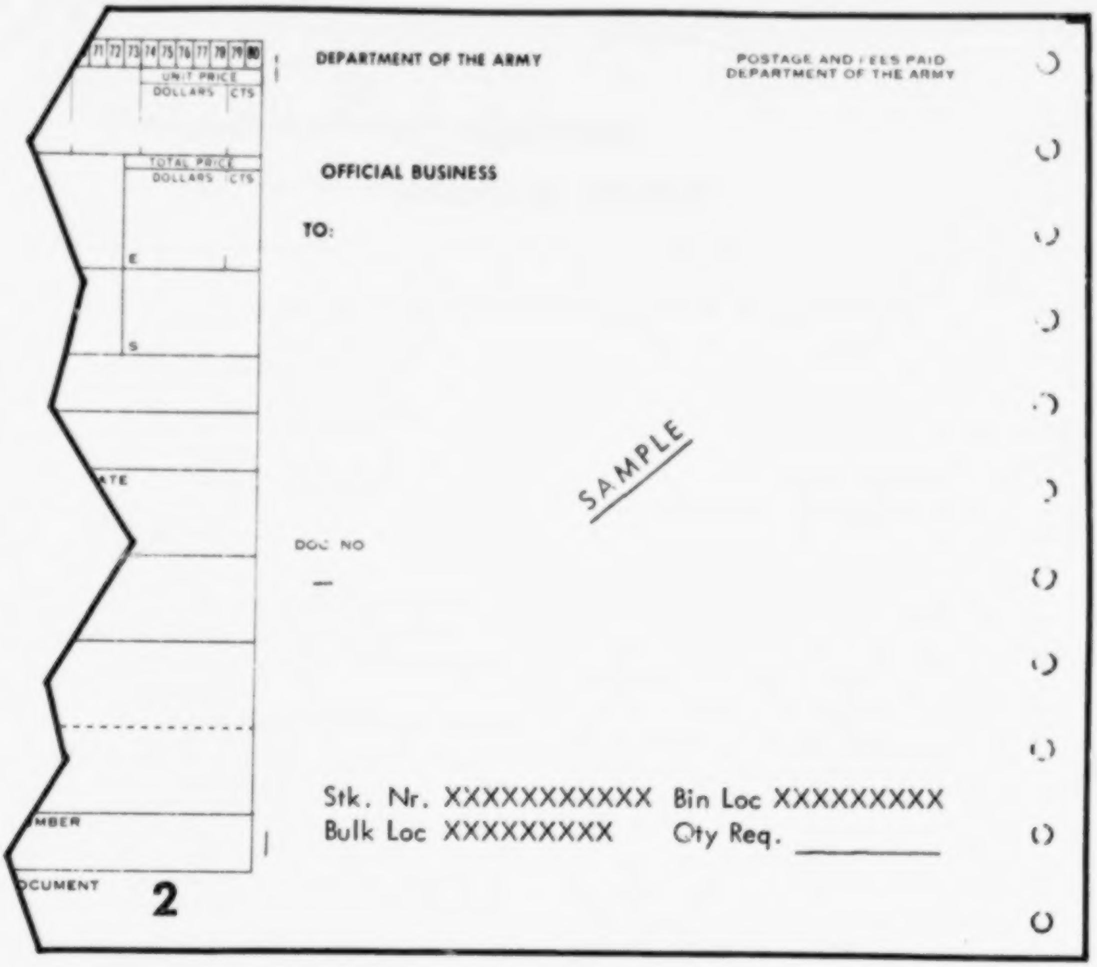
Replenishment in loose issue locations will be regulated by the size of the location. If the frequency reaches a high level, the size of the opening should be increased. If the frequency is at a low level, the size of the opening should be decreased. However, since replenishment is normally in standard pack quantities, the bin size must also be related to the standard pack. Specific limits for high or low levels of replenishment will be a local determination based upon the factors of distance between bulk and loose issue storage areas, item characteristics, materials handling system in use, and location availability. Normally, replenishment actions is initiated when the loose issue location reaches 25 percent of cubic capacity.

3.9.3. Replenishment Form

3.9.3.1. When the DD Form 1348–1A (DOD Single Line Item Release/Receipt Document) is used, it will be utilized to initiate necessary loose issue replenishment actions. When these documents are mechanically prepared, the lower portion of the address label will, as a minimum, contain the item stock number, bulk and loose issue locations, and space for entry by the stock selector of the quantity needed for replenishment of the loose issue location (fig. 1). Where manual preparation of the document is the only means available, the above referenced data will be entered by the stock selector if replenishment is required.

3.9.3.2. Installations that do not have the capabilities to mechanically process the DD Form 1348–1A will use the DA Form 3469, Bin Replenishment Form (Manual) (fig. 2). The manually prepared DA Form 3469 will use the same replenishment criteria and procedures as the mechanically prepared form. DA Form 3469 will be procured through U.S. Army Adjutant General Publications Center.

3.9.3.3. Initiation of the replenishment form. The stock selector will initiate the replenishment action immediately upon determination that the replenishment criteria has been met. This action



71 72 73 74 75 76 77 78 79 80

UNIT PRICE

DOLLARS | CTS

TOTAL PRICE

DOLLARS | CTS

E

S

ATE

MBER

OCUMENT

2

DEPARTMENT OF THE ARMY

POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY

OFFICIAL BUSINESS

TO:

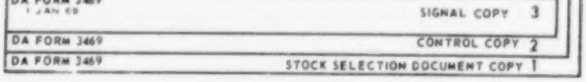
SAMPLE

DOC NO

—

Stk. Nr. XXXXXXXXXXX Bin Loc XXXXXXXXX
Bulk Loc XXXXXXXXX Qty Req. __________

Figure 1. Mechanically prepared replenishment form.



BIN REPENISHMENT FORM (MANUAL) For use of this form, see TM 743-200-1; the proponent agency is the United States Army Materiel Command.	DATE
STOCK NUMBER	LOOSE ISSUE LOCATION
BULK LOCATION	QUANTITY REQUIRED
REMARKS	
DA FORM 3469 1 JAN 69	SIGNAL COPY 3
DA FORM 3469	CONTROL COPY 2
DA FORM 3469	STOCK SELECTION DOCUMENT COPY 1

Figure 2. Bin replenishment form (manual).

must be accomplished during the issue process to avoid undue delay in stock selection resulting from exhausted loose issue locations.

3.9.4. Processing The Replenishment Action

The completed replenishment form will serve as a replenishment signal, replenishment control, and replenishment stock selection document. Processing of the replenishment action will be accomplished as follows:

3.9.4.1. Copy No. 1 of the mechanically prepared form will be affixed to a firm backing such as an EAM card.

Note. The No. 1 copy of the manually prepared form does not require firm backing.

It will then be forwarded to the bulk storage location indicated on the form.

3.9.4.2. Copy No. 2 will serve as a replenishment control. It will be forwarded by the stock selector to the suspense file. This suspense file will be located in proximity to the loose issue area. Filing will be in date and stock number sequence. Follow-up will be accomplished after 48 hours on all incomplete replenishment actions.

3.9.4.3. Copy No. 3 will serve as a replenishment signal to alert other stock selectors that replenishment is in process. It will be inserted behind the label holder or other easily visible place on the location being replenished.

3.9.5. Processing The Replenishment Action in Bulk Areas

The replenishment document will arrive in bulk areas through normal stock selection channels. These documents will be given selection priority following that of issue groups 1 and 2. The replenishment quantity will be selected by the bulk area stock selectors and forwarded with replenishment form to the loose issue area for replenishment of the indicated location.

3.9.6. Completion of The Replenishment Action

3.9.6.1. Materiel being stored will be compared and verified with materiel presently in location. Loose issue labels will be checked to assure that location identification is in agreement.

3.9.6.2. Prior to replenishment of the location, extraneous materiel will be removed and stocks will be aligned according to age to assure compliance with first-in first-out requirements. Materiel will then be stored in an orderly manner taking care to assure that materiel does not protrude into aisles and that the number of open containers is limited to one standard unit pack.

3.9.6.3. Upon completion of the location replenishment, the replenishment signal (No. 3 copy) will be removed from the location and destroyed. The replenishment form (No. 1 copy) will be dated, initialed by the person accomplishing the replenishment, and returned to the replenishment suspense file. The suspense form (No. 2 copy) will be removed from the file and matched against the No. 1 copy. After verification that replenishment has been accomplished, both copies will be destroyed.

CHAPTER 3

STORAGE PROCEDURES

Section X. OPERATIONS IN CONTROLLED HUMIDITY SPACE

	Paragraph	Page
Policy	3.10.1	310–1
General	3.10.2	310–1
Criteria for facility selection	3.10.3	310–1
Selection of supplies	3.10.4	310–3
Responsibilities	3.10.5	310–3
Utilization factors	3.10.6	310–4
Equipment and operations factors	3.10.7	310–5

3.10.1. Policy

Controlled humidity (CH) space is premium storage space. It will be used, to the maximum practicable extent, to store those items that require the protection afforded by CH environment. Items selected for CH storage will normally be afforded level C preservation. Local procedures governing control and usage of exterior doors in CH buildings will be developed to insure that dehumidification machine operating time is kept to a minimum. Control humidstats will be set to maintain a relative humidity (RH) level of 50 percent. (Deviations are covered in para 3.10.3.-1.4.)

3.10.2. General

3.10.2.1. In a high humidity environment, conventional storage facilities do not adequately protect certain types of supplies against damage and deterioration that can result from excessive humidity. This is particularly applicable where supplies are to remain in storage for extended periods. To insure maintaining functional capability of items in areas of high humidity, methods have been developed to control humidity within storage warehouses.

3.10.2.2. The control of humidity within storage structures is a method of protection—not a method of rejuvenation. CH storage will not remove rust that is already present, nor will it otherwise restore materiel that has deteriorated prior to storage. Materiel placed in this type storage in an unclean or contaminated condition may deteriorate, particularly when contamination is of a corrosive nature.

3.10.2.3. The recommended RH levels for broad categories of material are as follows:

Material	*Percent RH*
Metals	40–50
Plastics	Below 70
Paper	40–55
Wood	40–55
Textiles	40–50
Rubber	0–100
Leather	Below 70
Optics	Below 60

3.10.2.4. The unpredictable effect of air pollutants, such as dust and gaseous contaminants, makes storage of bare unprotected items impractical even in CH warehouses.

3.10.2.5. Reduced electric rates during off peak periods are offered by many utility companies. Each depot should seek this economic advantage in the operation of its CH equipment. Local conditions must be tested to assure the practicality of this approach in terms of maintaining an acceptable RH level.

3.10.3. Criteria for Facility Selection

3.10.3.1. RH reacts to changes in temperature to the extent that an increase of 20° F. will altar the RH by one half of its original value when the moisture content remains the same. Hence, those factors exercising a control over temperature also provide a similar effect on RH. A general purpose warehouse, depending on its design and condition, may provide a poor to excellent control of temperature and, therefore, RH as well. It is important, in determining the need for CH facilities, to measure the degree of RH control inherent in the warehouse facilities as they stand. Before starting this measurement the entry and exit to and from the warehouse should be limited in the manner prescribed for a CH warehouse.

3.10.3.1.1. A CH warehouse maintains the prescribed RH level on a year-round basis. To measure the inherent CH capability of a warehouse, therefore, requires collecting a year's continuous record of the RH and temperature in and outside the warehouse. This record will either identify the need for mechanical control of RH (in this event the records will serve in the development of CH design requirements) or indicate that the warehouse, aided by the climate, is the equivalent of a CH facility. This same method could be used to determine which one of several warehouses is most suitable for conversion when additional CH is required.

3.10.3.1.2. A hygrothermograph having the characteristics specified by TB ENG 256 should be used to accumulate the continuous annual records of RH and temperature. These instruments should be calibrated at the beginning of the recording period and at three month intervals during the recording period. The hygrothermographs will be positioned near the center of the warehouse section. Care will be taken to protect these instruments from the direct output of the dehumidifier and also from unprocessed air entering the building through cargo doors.

3.10.3.1.3. Selected time related data (0100, 0700, 1300, and 1900) as recorded on the hygrothermograph charts will be extracted, posted and tabulated in the manner illustrated in table 1. This method is prescribed to facilitate the collection of data needed to determine the presence of absence of CH equivalence. Original recordings provide a ready means of identifying any prolonged period during which the RH level exceeds the daily average level of 50 percent RH.

Table 1. Temperature and Relative Humidity Records for the week .... through ....

	Warehouse		Outdoors	
	RH	Temp	RH	Temp
Monday				
0100				
0700				
1300				
1900				
Tuesday				
0100				
0700				
1300				
1900				
Wednesday				
0100				
0700				
1300				
1900				
Thursday				
0100				
0700				
1300				
1900				
Friday				
0100				
0700				
1300				
1900				
Saturday				
0100				
0700				
1300				
1900				
Sunday				
0100				
0700				
1300				
1900				

3.10.3.1.4. An RH record that will qualify a warehouse as being the equivalent to a mechanically controlled one will conform to the following criteria:

3.10.3.1.4.1. A daily average level of 50 percent RH or less.

3.10.3.1.4.2. The annual cumulative period during which the RH level exceeds 50 percent (but not in excess of 60 percent RH) will not total more than 30 percent of the complete annual record.

3.10.3.1.4.3. RH levels above 60 percent can be tolerated but they must not exceed 72 consecutive hours in duration.

3.10.3.1.5. Application for recognition of CH equivalent status will consist of 52 tabulated data summaries modeled on the sample shown in table 1, the original hygrothermographic records or legible copies and a brief description of the warehouse(s). Descriptive data will include the identification of construction features such as the foundation, floor, walls, roof, fire protection, insulation, and heat. A cover letter signed by the installation commander will certify the record as being in conformity to the stated criteria. Application and certification for CH equivalence in oversea warehouses will be forwarded to the theater commander for approval.

3.10.3.1.6. Headquarters, AMC, or the appropriate command will confirm or reject the application based on review of the submitted record. Upon notification of approval for CH equivalence application the gaining installation will advise Accountable Supply Distribution Agencies (ASDA) of the changed warehouse status by letter.

3.10.3.1.7. Depots will report the approval of CH equivalence rating in the next required storage space utilization and occupancy report highlighting the rating approval in the remarks section of the report.

3.10.3.1.8. The terms "CH warehouse" and "CH storage" apply to warehouses that have been certified as CH equivalent as well as those dynamically controlled.

3.10.3.1.9. Storage activities with facilities that fail to meet the CH equivalence level should be considered for conversion to CH space through addition of dynamic dehumidification equipment.

3.10.3.1.10. When conversion to CH is indicated, prepare an outline of requirements in accordance with instructions contained in TB ENG 256.

3.10.3.1.11. The more modern, permanent warehouses built during and subsequent to WW II are preferred for the storage of wholesale distribution stocks. These warehouses will be given first consideration for conversion to CH space (by section or complete warehouse) as required and permitted by available funds.

3.10.3.1.12. Permanent warehouses having physical features which limit efficient storage operations will not be considered for conversion to CH storage unless study has proven that conversion is economically practicable for storage of selected items.

3.10.3.1.13. Sections of warehouses used for storage support functions such as receiving, shipping, and box shop will not be converted to CH space nor will space in existing CH facilities be used for storage support functions. Loose issue areas will be afforded a CH environment.

3.10.3.1.14. Considering cost of installation and continuing cost of operation, CH space can be installed most economically in permanent and standard portable frame warehouses, such as the following:

3.10.3.1.14.1. Permanent-type standard warehouses, 200′ x 1000′, or 200′ x 1200′ constructed since 1950, built-up roof, concrete roof decking with steel framing or laminated wood roof framing, block or brick side walls and dock level floors.

3.10.3.1.14.2. Permanent-type warehouses, gabled roof with steel framing; block or tile walls, windows, and louvers.

3.10.3.1.14.3. Permanent-type warehouses constructed between 1940 and 1950, 180′ x 1440′ (or multiples of 240′ sections), with monitor in center third of roof, block or brick side walls, and dock level floor.

3.10.3.1.14.4. Standard portable frame warehouses constructed in accordance with Corps of Engineers Drawing No. 33-02-87, 22 December 1954. The design of this type warehouse provides for proper construction for CH space. The size of this warehouse is 60′ x 133′ with minimum clear height of 14′ 8″.

3.10.3.1.15. The mobilization type warehouses, 180′ x 1440′, built-up roof with timber framing, monitor on roof, with continuous window openings, wood or asbestos siding, should not be considered for conversion to CH space, except as a low priority, due to the expense of such conversion.

3.10.4. Selection of Supplies

3.10.4.1. General supplies to be stored in controlled humidity areas are designated in SB 740-1.

3.10.4.2. Prescribed safety provisions for any class V items stored in CH storage will be adhered to.

3.10.5. Responsibilities

3.10.5.1. Director for Services or Post Engineer will:

3.10.5.1.1. Operate and maintain dynamic humidity reduction equipment and all meters, recording devices, and building maintenance related thereto.

3.10.5.1.2. Accumulate, summarize, and distribute developed "control" data to the extent required to effect efficient operation of equipment and maintenance of proper humidity levels.

3.10.5.1.3. Correct, or bring to the attention of the proper persons, any conditions which indicate undesirable trends in RH levels, unreasonable continuous operation of dynamic dehumidifiers, "open door" time, or any other factor which suggests excessive moisture ingress (TB ENG 256).

3.10.5.2. Storage Division will:

3.10.5.2.1. Assure that full objectives of the controlled humidity storage program are realized, i.e., maximum practical utilization of this asset by reduction and retention of inside RH at prescribed level through prudent control of "open door" time as well as other applicable moisture influencing considerations set forth herein.

3.10.5.2.2. When practical, use a centrally located exterior hygrothermograph for advising CH space users when outside conditions equal or are more favorable than those conditions in the CH storage environment. Under such conditions doors may be opened in the interest of substituting dryer natural air. This will conserve electrical power and provide ventilation if desired.

3.10.5.2.3. Promptly inform the Post Engineer of any related conditions in CH buildings which require attention.

3.10.5.3. Safety Director will maintain surveillance of CH areas, particularly where gasoline engine powered equipment is utilized, so as to insure a safe working environment.

3.10.6. Utilization Factors

3.10.6.1. Storage operations personnel in CH warehouses will utilize the same basic principles of good warehousing that are practiced in conventional warehouses. Specific attention will be given to modernization plans which are geared to the improvement of practices. Storage arrangement should provide for maximum utilization of available cube, direct accessibility of supplies and equipment for proper stock rotation, accurate and legible identification, and conduct of safe storage practices.

3.10.6.2. When stored in CH space, equipment items, both mobile and immobile, which are not adaptable to stacking or racking should be stored in low roof areas. Due consideration will be given to serially-numbered items sofar as storage methods may affect facility of in and out movement.

3.10.6.3. Unserviceable, economically reparable and condition code K materiel awaiting classification (returned materiel), or repackaging, will be temporarily afforded CH storage on a space available basis in accordance with the priority established for the serviceable item.

3.10.6.4. Items for normal distribution and for mobilization reserve which are usually stored together to assure rotation of stock will continue to be so stored when committed to CH storage.

3.10.6.5. Depots having CH storage tanks must recognize one basic difference between CH warehouse space and CH tanks. Supplies stored in CH tanks must of necessity be confined to inactive, reserve type stocks, since ready and frequent access to the interior of these tanks is normally uneconomical or impractical. When feasible, these facilities will be phased out of use in the interest of economy of operations.

3.10.6.6. Schedules for cyclic inspection of items which have not been otherwise designated by the responsible commodity manager will be extended to a 5-year cycle for CH storage.

3.10.6.7. Minimum levels of protection can be safely applied to materiel consigned to CH storage. Items will not be represerved, or re-packaged merely to attain a lower level of protection for CH storage, unless such is accomplished as a byproduct of the normal care of supplies program or maintenance operations (Chap. 3, Sec. VIII).

3.10.6.8. In some instances, materiel destined for CH storage and received at depots is received with nonmilitary type packaging. In such instances, receipts will be placed in CH storage as received provided applied packaging assures reasonable protection. If CH storage space is not available for such receipts, the level of protection will be raised consistent with the type of storage available and the requirements of AR 700-15.

3.10.6.9. Receipts will be placed in CH storage in accordance with priorities cited in SB 740-1.

3.10.6.10. Supplies and or pallets which are wet or damp from exposure should not be moved into CH areas until dry.

3.10.6.11. Inter-warehouse transfer of materiel should be conducted in favorable weather to prevent deterioration of item or item protective materiel.

3.10.7. Equipment and Operations Factors

3.10.7.1. CH equipment installed in warehouses should be located so as not to obstruct traffic aisles (fig. 1).

3.10.7.2. It is essential that the entrance of humid air into CH warehouses be kept to the minimum in order to maintain the RH at desired level. Door control is of paramount importance, since the greatest source of moisture penetration is through open doors. Movement of supplies into and out of CH space will be planned, to the greatest extent practicable, so that only one exterior cargo door in a section is open at a time. When two doors are open at the same time, particularly on opposite sides of the warehouse, drafts are generated which greatly increase the infiltration of warehouse environment by outside air.

3.10.7.3. To offset any operational disadvantage occurring as a result of the "closed door" policy, a convenient means can be provided that will cause cargo doors to immediately open and subsequently close when entrance or exit is made. It is time-consuming for operators to dismount from their vehicles, open the doors, remount the vehicles, and drive through the doors and then dismount once again to close the doors behind them.

3.10.7.4. Use of power-actuated auxiliary doors is one recommended means for counteracting

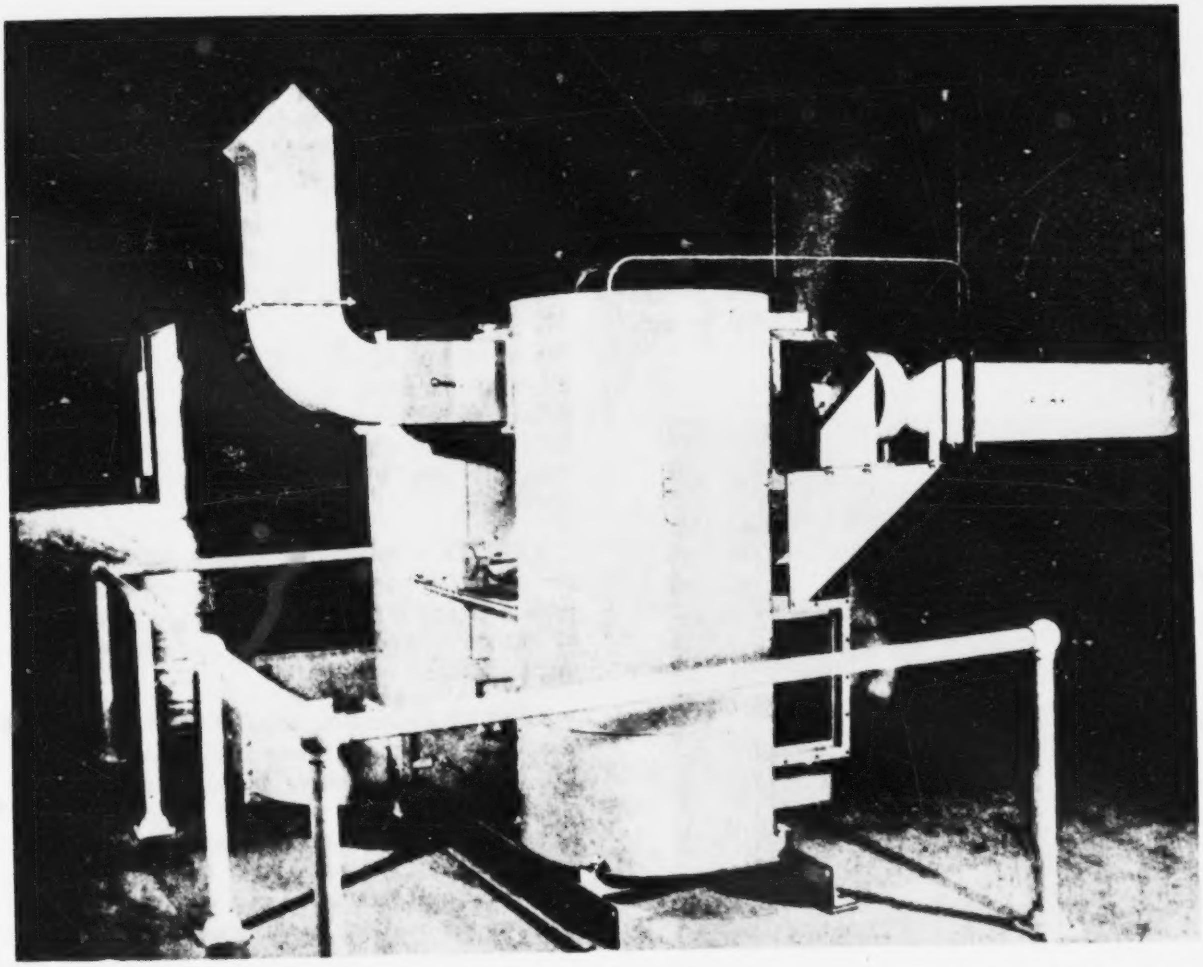


Figure 1. A desiccant type dehumidifier. These machines are installed at prescribed intervals within the warehouse to draw in the moist air, extract the moisture and blow the air back into the area. To eliminate obstructing operating areas these machines can be located on elevated platforms.

this problem in active CH areas. Large curtain type rubber or metal doors actuated by contact with materials handling equipment (tractors, forklift trucks) can be installed in appropriate openings when desirable. These auxiliary doors are not intended to replace current security doors; therefore, they will be so positioned as not to interfere with the opening and closing of the permanent doors (fig. 2).

3.10.7.5. In the normal warehouse operation, inside doors connecting the separate warehouse sections are left open during operational periods. For CH warehouses, during any extensive movement of materials inner connecting doors to adjacent sections should be closed to minimize spread of moisture. In many cases, in and out traffic in CH warehouses is not sufficient to justify the installation of power operated automatic or semi-automatic door opening and closing devices. Yet, in and out traffic is often extensive enough to have an adverse effect on CH operations. In such instances, consideration should be given to the installation of alarm systems to warn operating personnel when warehouse doors are staying open too long.

3.10.7.6. Normally, personnel traffic, using regular personnel type doors, will have little effect on controlled humidity operations. Personnel should be cautioned to use these doors in lieu of fire doors and that the doors do not remain open.

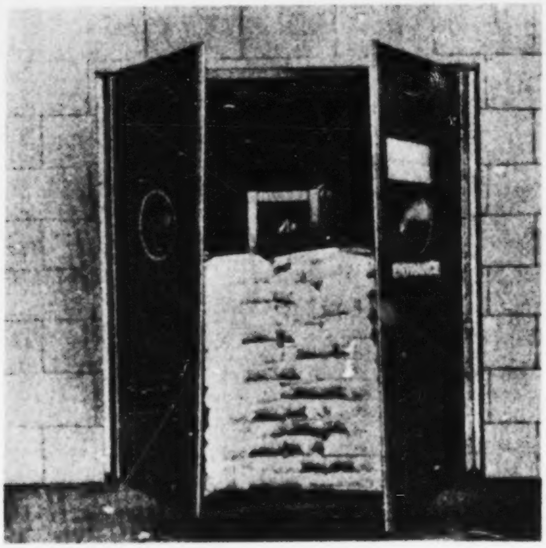


Figure 2. Auxiliary door actuated by contact with materials handling equipment.

3.10.7.7. It is advocated practice to seal as many access doors as practicable in conversion to CH space. The sealing of cargo doors should be so designed that doors can be opened for use as peak work situations of major significance and duration warrant. It is also advisable to design sealing techniques in a manner that will allow doors to remain in "hung" position. Closure should not involve bricking up doorways nor removal of doors.

3.10.7.8. The employment of battery-powered equipment in CH warehouses is preferred, and is particularly recommended in very active areas.

3.10.7.8.1. Availability can be an important factor in equipment selection for handling supplies in CH storage. The handling of hazardous commodities and operations within hazardous areas will be given priority for use of battery-powered materials handling equipment.

3.10.7.8.2. Where battery-powered equipment cannot be used in CH storage, gasoline-engine-powered equipment can be used with certain precautions. In use of such equipment, certain factors must be considered.

3.10.7.8.2.1. Reduced ventilation multiplies the hazard of using gasoline-engine-powered equipment, because of the increased concentration of exhaust contaminants.

3.10.7.8.2.2. When utilizing gasoline-engine-powered handling equipment in controlled humidity warehouses, any concentration of carbon monoxide gas which exceeds 50 parts of carbon monoxide per 1,000,000 parts of air must be prevented.

3.10.7.8.2.3. An engine with a "rich" mixture produces far more carbon monoxide than one with a "lean" mixture, and the rate of evolution of carbon monoxide is much greater when the engine is cold.

3.10.7.8.2.4. Gasoline engines in forklift trucks should be turned off when not in service. Forklift trucks should never be allowed to idle in stand-by service for a period greater than 30 seconds. Gasoline powered forklift trucks should be stored at night outside of the building. The equipment will be started and warmed up before entering the building at the start of the working day. Where such procedure is impractical, the exhaust during the warm-up period should be carried outside of the building by means of a temporary hose attached for this purpose. The gasoline engines should be checked at frequent intervals by means of a motor analyzer, and readjusted for maximum performance and minimum carbon monoxide generation.

3.10.7.8.2.5. The installation Safety Officer, upon request, will perform or obtain qualified personnel to perform tests and make determination as to the extent of hazard caused by equipment engine exhaust and if deliberate ventilation must be introduced to prevent dangerous concentrations of toxic fumes.

CHAPTER 3

STORAGE PROCEDURES

Section XII. Small Arms Security and Storage Controls

	Paragraph	Page
Purpose	3.12.1.	312-1
Definitions	3.12.2.	312-1
Policy	3.12.3.	312-2
Responsibilities	3.12.4.	312-2
Procedures	3.12.5.	312-2
Unloading	3.12.5.1.	312-2
Receipts verification	3.12.5.2.	312-2
Discrepancies discovered at time of receipt	3.12.5.3.	312-2
Inspection	3.12.5.4.	312-3
Storage Practices	3.12.5.5.	312-3
Stock location	3.12.5.6.	312-3
Packing and marking requirements	3.12.5.7.	312-4
Shipments	3.12.5.8.	312-4
Inventory	3.12.5.9.	312-5
Department of Defense Small Arms Serialization Program (DODSASP)	3.12.6.	312-5
APPENDIX A. Record of Certification		312-A-1
B. Storage Reference Point Change Card Format		312-B-1
C. References		312-C-1

3.12.1. Purpose

This section establishes minimum security controls and special handling requirements for the receipt, storage, issue and transportation of small arms. It also provides requirements for serial number control of small arms.

3.12.2. Definitions

To provide a clear understanding of this section the following terms are provided:

3.12.2.1. Certifying Officer. Individual(s) designated by installation commanders to certify physical item counts. Such individuals may be military personnel or civilians designated by approved orders.

3.12.2.2. Joint Count. A joint physical count verification conducted independently by two individuals or teams, for the purpose of verifying quantities, serial number of weapons, or both quantities and seriwl numbers.

3.12.2.3. Limited Area. A restricted area containing a security interest or other matter in which uncontrolled movement will permit access to such interest or matter, but within which access can be prevented by escort and other internal restrictions and controls.

3.12.2.4. Physical Item Count. A verification of quantity by direct observation of container contents.

3.12.2.5. Physical Security. The part of security concerned with physical measures designed to safeguard personnel, to prevent unauthorized access to equipment, facilities, materiel and documents, and to safeguard them against espionage, sabotage, damage and theft.

3.12.2.6. Restricted Area. Any area, access to which is subject to special restrictions or controls for reasons of security or safeguarding of property or materiel. See AR 380-20.

3.12.2.7. Sensitive Item. Materiel which requires a high degree of protection and control due to statutory requirements or regulations, such as narcotics and drug abuse items; precious metals; items which are of high value, highly technical or of a hazardous nature; and small arms, ammunition, explosives and demolition materiel as specified in appendix A of DOD 5100. 76-M.

3.12.2.8. Small Arms. Handguns; shoulder-fired weapons; light automatic weapons up to and including, .50 caliber machine guns; recoilless rifles up to and including 106MM; mortars up to and including 81MM; rocket launchers manportable; grenade launchers; rifle and shoulder fired; and individually operated weapons which are portable and/or can be fired without special mounts or firing devices and which have potential use in civil disturbances and are vulnerable to theft.

3.12.2.9. Special Control Item Code. A single character alphabetic or numeric code which identifies special controls applicable to the item to which it is assigned. The codes are listed in AR 708-1.

3.12.2.10. Storage Reference Point. A record of where each weapon is located within a defined storage location. The storage reference point is designed to pinpoint areas within a valid location.

3.12.3. Policy

Basic sensitive item controls in existing regulations, directives and manuals as delineated in appendix F. will continue to apply to small arms stocks along with specific security and storage procedures outlined in this section.

3.12.3.1. Small arms stocks will be stored in controlled physical security buildings, or areas and will not be interspersed with other items of supply, or other pilferable and sensitive materiel. Receiving, shipping, preservation, packaging and maintenance of small arms will be processed under controlled physical security procedures at all times.

3.12.3.2. Building areas utilized for the storage of small arms will be designated and posted as restricted areas.

3.12.3.3. Unloading of small arms will be accomplished at storage location sites, whenever practicable, to minimize intradepot movements.

3.12.3.4. Small arms received at CONUS storage depots in nonstandard containers will be repacked in uniform standard containers in uniform quantities per container.

3.12.3.5. Small arms receipts processed at CONUS storage depots will be verified for quantity and accuracy and stowed in final location prior to reporting receipt to the ASDA.

3.12.3.6. Small arms storage locations will be closely managed to reduce excessive multiple locations. Multiple small arms storage locations will be controlled within the DA 1.3 to 1 ratio.

3.12.3.7. Intrainstallation shipments of small arms will be provided the intransit security requirements as specified in AR 190-49.

3.12.3.8. When small arms physical responsibilities change from one organizational entity or directorate to another a joint physical count will be accomplished.

3.12.3.9. Retrograde small arms awaiting decontamination, inspection, classification, or processing action prior to storage or disposition will be controlled, secured and given surveillance to the same degree as that provided issuable small arms.

3.12.3.10. Small arms being held for disposal action will be provided security equal to that afforded like materiel in normal issue stocks.

3.12.3.11. Small arms will be destroyed or otherwise disposed of only upon receipt of specific written instructions from the Accountable Supply Distribution Activity (ASDA) concerned. (See 3.12.6. for Department of Defense Small Arms Serialization Program (DODSASP) reporting procedures.)

3.12.3.12. Demilitarization instructions for small arms are contained in DOD 4160.21.1-M.

3.12.4. Responsibilities

Commanders will administer the necessary measures for small arms control and operation of DODSASP.

3.12.5. Procedures

3.12.5.1. Unloading.

3.12.5.1.1. Unloading of small arms will be accomplished on a priority basis and materiel placed under control as expeditiously as possible to reduce the opportunities for loss or pilferage.

3.12.5.1.2. Wherever possible, unloading will be accomplished at small arms storage location sites, thereby eliminating additional intradepot movement.

3.12.5.2. Receipts Verification.

3.12.5.2.1. All small arms receipts will be subjected to a 100 percent verification of weapons and serial numbers plus a quality check of the operations.

3.12.5.2.2. Small arms received with DODSASP cards attached will be opened for 100 percent verification of quantity and serial number except for shipments from procurement in which the contract calls for 100 percent serial number certification by the contractor and checked by the Government contract representative. These receipts can be randomly sampled to verify the accuracy of the serial numbers in the shipment.

3.12.5.2.3. Containers, when opened, will be resealed (nailed) and banded immediately upon completion of count and serial number verification.

3.12.5.3. Discrepancies Discovered at Time of Receipt.

3.12.5.3.1. The following actions will be taken, as appropriate, in cases where there is an overage, shortage, damage, partial loss, pilferage, theft, or misconsignment in shipment of small arms.

3.12.5.3.1.1. Notify the installation security officer.

3.12.5.3.1.2. Prepare SF 363 (Discrepancy in Shipment Confirmation (DISCONS)) within 24 hours from time of discovery in accordance with AR 735-11 and AR 735-11-2.

3.12.5.3.1.3. If the discrepancy is satisfactorily resolved, provide the recipients of the initial SF 363 with another copy of the form, annotated "cancelled," signed and dated. The cancellation should be explained in detail within the remarks block of the form as delineated in AR 735-11 and AR 735-11-2.

3.12.5.3.1.4. After 30 workdays from date of discovery, if the discrepancy has not been resolved, an SF 361 (Discrepancy in Shipment Report (DISREP)) will be prepared and distributed in accordance with AR 735-11 and AR 735-11-2. A copy of the initial SF 363 will be attached to SF 361.

3.12.5.4. Inspection.

3.12.5.4.1. Stringent inspection procedures will prevail throughout operations to determine evidence of tampering.

3.12.5.4.2. All inspection, identification, repair, testing, packing, marking, checking, and associated physical operations required in connection with small arms will be performed within the secured storage area whenever possible. When quantity or complexity of processing precludes this, temporary restricted areas will be established as required. Small arms in functional processing areas will be afforded equal security as specified in paragraph 3.12.5.5.1.

3.12.5.5. Storage Practices.

3.12.5.5.1. Small arms will be stored apart from other pilferable and sensitive materiel for the purpose of maintaining strict physical security and limiting access to specifically authorized personnel. When available facilities do not permit geographic separation of small arms into separate buildings, then, storage is permitted in buildings where other sensitive, or pilferable items are stored. When this latter method is used, small arms will be separated from these items by a locked security cage, fencing, or other acceptable means.

3.12.5.5.2. Storage layouts for small arms will be designed to facilitate receipts, issues, inventory counts and serial number verifications. To meet these requirements, small arms storage areas must be planned to accommodate large, medium and small lots of materiel with minimum rewarehousing. General guidelines contained in chapter 2, DOD 4145.19-R-1, and special instructions provided below will be utilized by installations storing small arms.

3.12.5.5.3. Bulk storage patterns will be organized to provide sufficient flexibility for items with a history of high activity. Small arms stored in large quantities by condition code will be located in areas where future expansion may be accomplished with minimum rewarehousing effort. When conditions change due to an increase, or decrease in activity volume, storage managers will adjust warehousing plans accordingly.

3.12.5.5.4. Large blocks of bulk small arms will be arranged to permit access, for serial number verification or box count verification, with minimum manpower and MHE whenever practicable. This objective can be achieved by: *(a)* providing sufficient clearance on both sides of each stack to permit withdrawal by MHE from the front to the rear of the row without moving adjoining stacks of materiel in the next row or *(b)* providing a small personnel access aisle on each side of a double stack to verify serial number cards. The latter method will allow visual observance of containers from the floor, or by ladder at high stacks if DOD-SASP cards are affixed to the sides of each container facing an access aisle. Installations with limited storage space will use the first alternative (method *(a)*).

3.12.5.5.5. To prevent pilferage, or tampering, small containers of small arms will be repacked into a full size unit pack, or unit load, or will be moved to a high security area for storage of smaller units. This high security area will be locked and monitored regularly by responsible individuals to insure that physical security is continuously maintained.

3.12.5.6. Stock Location.

3.12.5.6.1. Small arms stock location controls are outlined below. (Also see section III of this chapter for established stock location procedures.)

3.12.5.6.2. Small arms will be identified to temporary, or permanent stock locations immediately upon receipt. Temporary stock locations will be utilized while stocks are being processed through receiving. Upon completion of receipts processing, verification and required quality checks for accuracy, stocks will be directed to permanent locations, or to other processing areas (maintenance or P&P) if applicable. In all instances, the central locator file will be updated daily to reflect the actual location of stocks. Quality control checks on all small arms location changes, additions and deletions will be performed on a daily basis.

3.12.5.6.3. The DA locator accuracy objective for small arms is to attain 100 percent accuracy. A major element in achieving this goal is to insure that all stock location movements of small arms are recorded and processed to central locator records on a daily basis. Warehouse personnel assigned to small arms storage areas will be properly trained and monitored by supervision and quality checks for accuracy of performance.

3.12.5.6.4. A complete location survey of all small arms stock locations will be accomplished semiannually.

3.12.5.6.5. The number of stock locations for small arms will be separately evaluated semiannually and strictly controlled to avoid creation of excessive multiple stock locations in storage. General controls outlined in 3.3.2.4. of this manual will be followed in conjunction with specific instructions contained herein.

3.12.5.6.5.1. For small arms storage areas a separate analysis will be made to determine the ratio of storage locations to small arms line items stored. The ratio will be based upon definitive locations for each NSN stored (by condition code). Maintenance; P&P and temporary stock locations will be excluded when determining the small arms ratio.

3.12.5.6.5.2. When the small arms stock location ratio exceeds the DA 1.3 to 1 ratio (after exclusion of maintenance, P&P and temporary stock location), an analysis will be made to determine the extent of consolidation (warehousing) to a lesser number of recorded locations. This analysis will be achieved by statistically sampling line items with more than three recorded storage locations to determine the validity or extent corrective actions. Sample size and acceptance/rejection limits will be as described in 3.3.2.4.4.

3.12.5.6.6. Upon notification of a scheduled location survey or inventory of small arms, storage managers will suspend rewarehousing actions until completion of the survey or inventory.

3.12.5.6.7. Standard location identification placards or labels as prescribed in 3.3.4.6. and *3.3.5.1.1.* of this manual will be strictly enforced for all small arms stocks.

3.12.5.7. Packing and Marking Requirements. Small arms will be packed in standardized containers as prescribed in Packaging Data Sheets, MIL-T-60530 (CONUS) and TM 750-136 (overseas). Marking requirements for small arms are contained in MIL-STD-129. Care will be exercised when opening standard containers to allow for reclosure after surveillance and/or inventory verification. Sealed bags fabricated for preservation of small arms within containers will be of sufficient length to allow for opening and resealing as necessary.

3.12.5.7.1. Small arms receipts received in nonstandard containers will be repacked in standard containers of uniform size and in uniform quantities for security, inventory and control purposes. The guidance in paragraph 3.12.5.7. above will be followed in determining standard containers.

3.12.5.7.2. The degree of protection/preservation to be applied when repacking small arms under these instructions will conform to established procedures by condition code, existing level of preservation and type of storage as specified in AR 740-1. For example, small arms received as condition code F (unserviceable) will be repacked to meet security, inventory and control policies and provide adequate protection to maintain the items in an "as is" condition.

3.12.5.8. Shipments.

3.12.5.8.1. Small arms are extremely vulnerable to pilferage during movement and transport. Loading procedures, containerization, segregation and security aboard ship, in railroad cars, trucks, and aircraft present security hazards of varying degrees. To provide for the security of this materiel in transit, the responsibilities of the consignor, the carrier, and the consignee must be clearly established.

3.12.5.8.2. The consignor will insure that all cargo requiring security protection is entrusted only to those carriers properly equipped for handling this cargo.

3.12.5.8.3. Preferably, small arms selected for shipment should be packed by the consignor in the building where the materiel is stored.

3.12.5.8.4. Whenever the above cannot be accomplished in a restricted storage area, temporary restricted areas will be established, as required, to insure physical security of small arms at all times.

3.12.5.8.5. Shipments will be packaged, marked, and packed to minimize intransit exposure of materiel to scrutiny, container rupture, undetected entry, loss, damage, illegal acts, and security compromise. See AR 190-49.

3.12.5.8.6. Markings will not reveal the nature of the materiel except to the extent required for compliance with transportation regulations, or when the shipper service has determined that ready identification of items being shipped is necessary. Packing lists will be excluded from the exterior of shipping container (ref MIL-ST-D-129).

3.12.5.8.7. Loading will be accomplished as soon as the cargo is brought to the carrier. Load preassembly outside of limited access areas will not be practiced.

3.12.5.8.8. All shipments and counts will be verified by a certifying officer (see 3.12.2.1.). Appendix A (DA Form 5026-R) is a "Record of Certification—Small Arms Shipment Control." This record of certification will be maintained for 24 months. DA Form 5026-R may be reproduced locally on 8½" × 11" paper. Banded containers (that have been previously verified by the storage activity through receipt or repacking processing) with no visible evidence of tampering need not be reopened for count verification purposes.

3.12.5.8.9. The carrier conveyance will be sealed immediately and moved as soon as practicable after the loading has been completed.

3.12.5.8.10. Loading and sealing of containers or carrier conveyances with shipments of small arms will be in accordance with paragraph 226005a(1), AR 55-355, and paragraphs 2-4 and 2-6*c*(2), AR 190-49.

3.12.5.8.11. An advance notice of shipment will be forwarded to the consignee as specified in paragraph 226005*a*(4), AR 55-355, and paragraph 2-6*a*, AR 190-49.

3.12.5.8.12. These measures do not replace the requirement for application of seals on rail car doors or truck/trailer doors and recording the number on Government bills of lading (GBL).

3.12.5.9. Inventory. General inventory procedures are outlined in section VII of this chapter. Physical inventory requirements will conform to the policies published in AR 740-26 and 710-2.

3.12.6. Department of Defense Small Arms Serialization Program (DODSASP)

3.12.6.1. General. All Army organizations, activities, and installations will be part of a worldwide small arm serial number control system as defined herein. Small arms rendered inoperable in accordance with DOD 4160.21-M will be reported initially to the DOD Central Registry and will not be included in subsequent reporting to the DOD Central Registry. The objective of the system is to establish visibility by serial number of all small arms within DA. It is designed to provide the investigative agencies with the identification of the last known accountable/responsible activity having a specific serial numbered weapon.

3.12.6.2. Establishing Files.

3.12.6.2.1. Each installation will establish a mechanized or manual record of serial numbers of small arms, in inventory, or, on hand, in all support units/activities.

3.12.6.2.2. Files (particularly if manual) should be maintained in NSN sequence to maximize visibility and to facilitate reconciliation with the central registry.

3.12.6.2.3. As a minimum, the installation file will identify small arms ownership to the property book level. In the case of depot wholesale stocks, the physical storage location of each serial number will be recorded in the file.

3.12.6.2.4. Issues to or transfers between supported activities will be recorded in installation files, but will not be reported to the central registry. Small arms on loan to other activities will be considered part of the file as long as accountability is maintained on a supported stock record or property book account.

3.12.6.2.5. Transactions that result in a gain or loss to the responsible file will be reported to the central registry. Transaction codes and definitions are shown in TM 38-214.

3.12.6.2.6. Files will be reconciled with the central registry in accordance with AR 710-3 and TM 38-214. A reconciliation schedule will be developed by the US Army Armament Materiel Readiness Command (ARRCOM) and coordinated with Service registries.

3.12.6.3. Reporting.

3.12.6.3.1. Reporting of small arms data will be accomplished by recording serial numbers by stock number to the installation and DA registry. (As described in AR 710-3 and TM 38-214).

3.12.6.3.2. Three cards will be prepared for each weapon in a box. Two of these will be placed in an envelope and securely attached to the box while the weapons are in storage. The third card will be used to establish the installation file and to transceive the data to the DA registry.

3.12.6.3.3. Each transaction recording a weapon serial number in installation stock will include the storage reference point (see *3.12.2.10.*) at which the weapon is stored.

NOTE

> Since the DODSASP system card format cannot accommodate nine digits, the storage reference point field should use the last eight positions of the storage location pattern outlined in section III, this manual.

3.12.6.3.4. If small arms serial numbers can be identified to specific boxes (by cards or listings) during the storage, issue, and movement cycle, (with the exception of inventory) the weapons boxes need not be opened to verify the serial number. The serial number data will be extracted from the small arms cards or listings.

3.12.6.4. Storage reference point changes. Storage reference points will be recorded to the installation DODSASP register only.

3.12.6.4.1. Storage reference point changes as a result of rewarehousing actions, movements to maintenance, etc., will be reported to the installation DODSASP register only.

3.12.6.4.2. Storage reference point change cards will be prepared as outlined in appendix B.

APPENDIX A

DA FORM 5026-R

NOTE

DA Form 5026-R (app A), Record of Certification—Small Arms Shipment Control, which follows this page may be reproduced locally on 8 ½" × 11" paper.

RECORD OF CERTIFICATION* **SMALL ARMS SHIPMENT CONTROL** For use of this form, see TM 743-200-1; the proponent agency is DARCOM.	MRO DOCUMENT NO.

SECTION A–SHIPPING PREPARATION

I CERTIFY THAT SMALL ARMS DESCRIBED BELOW WERE PREPARED FOR SHIPMENT.

NOMENCLATURE	NSN	QUANTITY	NO. OF BOXES
NAME AND GRADE OF PERSON PREPARING SHIPMENT *(Type or print)*	ORGANIZATION		
SIGNATURE		DATE	

SECTION B–ASSUMPTION/TRANSFER OF CUSTODIANSHIP

1. NAME AND GRADE OF CUSTODIAN *(Type or print)*	ORGANIZATION	NO. OF BOXES
SIGNATURE		DATE
2. NAME AND GRADE OF CUSTODIAN *(Type or print)*	ORGANIZATION	NO. OF BOXES
SIGNATURE		DATE
3. NAME AND GRADE OF CUSTODIAN *(Type or print)*	ORGANIZATION	NO. OF BOXES
SIGNATURE		DATE
4. NAME AND GRADE OF CUSTODIAN *(Type or print)*	ORGANIZATION	NO. OF BOXES
SIGNATURE		DATE

SECTION C–SHIPPING

I CERTIFY THAT ABOVE SMALL ARMS WERE SHIPPED.

CARRIER'S NAME *(Type or print)*		GBL OR MANIFEST NO.
NAME AND GRADE OF PERSON EFFECTING SHIPMENT *(Type or print)*	ORGANIZATION	NO. OF BOXES
SIGNATURE		DATE

**File and retain this record for 24 months. Use reverse side for REMARKS, as necessary.*

DA FORM 5026-R, MAR 82

AP

STORAGE REFERENCE

Data Element Code

Document identifier code DSM. . . . .
Routing identifier code (Depot RI) . . . .
Process code "1" . . . .
Stock number. . . . .
Storage reference point—Old . . . .
Blank . . . .
Serial number (right justify—fill positions right
Storage reference point—new . . . .
Blank . . . .

PPENDIX B

POINT CHANGE CARD FORMAT

	Position
	1-3
	4-6
	7
	8-22
	23-30
	31-56
t to left, unused positions with zeros (0))	57-67
	68-75
	76-80

APPENDIX C

REFERENCES

AR55-16	Movement of Cargo by Air and Surface—Including Less Than Release Units and Parcel Post Shipments
AR 55-38	Reporting of Transportation Discrepancies in Shipments (RCS-MTMTS-54(R1))
AR 55-355	Military Traffic Management Regulation
AR 66-6	Armed Forces Courier Service Charter
AR 190-11	Physical Security of Weapons, Ammunition, and Explosives
AR 190-13	The Army Physical Security Program
AR 190-49	Physical Security of Arms, Ammunition and Explosives In-Transit
AR 310-25	Dictionary of United States Army Terms (Short Title: AD)
AR 380-5	Department of the Army Supplement to DOD 5200.1-R (Department of the Army Information Security Program (DODISPR))
AR 380-20	Restricted Areas
AR 380-55	Safeguarding Classified Defense Information in Movement of Persons and Things
AR 690-1	Civilian Applicant and Employee Security Program
AR 708-1	Cataloging and Supply Management Data
AR 710-2	Supply Policy Below the Wholesale Level
AR 710-3	Asset and Transaction Reporting System
AR 725-50	Requisitioning, Receipt, and Issue System
AR 735-11	Accounting for Lost, Damaged, and Destroyed Property
AR 725-11-2	Reporting of Item and Packaging Discrepancies
AR 740-7	Safeguarding of Sensitive, Drug Abuse Control, and Pilferable DSA Items of Supply
AR 740-26	Physical Inventory Control
FM 19-30	Physical Security
TM 38-214	Small Arms Serialization Program
MIL-STD-129	Marking for Shipment and Storage
DODR 4500.32-R	Military Standard Transportation and Movement Procedures (MILSTAMP)
DOD 4140.22-M	Military Standard Transaction Reporting and Accounting Procedures (MILSTRAP)
DOD 4160.21.-M	Defense Demilitarization Manual
DOD 5100.76-M	Physical Security of Sensitive Coventional Arms, Ammunition, and Explosives.
DOD 5200.1-R	DOD Information Security Program Regulation (DODISPR)

CHAPTER 3
STORAGE PROCEDURES

Section XIII. EXTREME COLD WEATHER STORAGE CONSIDERATIONS

	Paragraph	Page
Definitions	3.13.1	313.1
General	3.13.2	313.1
Policy	3.13.3	313.1
Principles	3.13.4	313.2
APPENDIX A. SPECIFICATION DATA-WINTERIZATION MATERIAL		313.3
B. REFERENCES		313.5

3.13.1. Definitions

3.13.1.1. Extreme Cold Weather Regions. Areas in which the temperature range is 0° to −65° F. and below.

3.13.1.2. Arctic Lubrication. The process of applying or changing oils, greases, gear lubricants, hydraulic fluids, coolant, and other materials as may be prescribed for equipment, to permit satisfactory operation in extreme cold climates.

3.13.1.3. Winterization. The installation of authorized winterization equipment or kits in accordance with shipping instructions or other applicable directives.

3.13.2. General

3.13.2.1. Guidance contained herein is applicable to arctic and subarctic regions of North America and Eurasia subject to temperature ranges of 0° to −65° F. and below. It is also applicable to storage activities processing and shipping equipment and supplies to these regions.

3.13.2.2. In North America, the arctic region encompasses the northern coast of Canada (except the southern portions of the Hudson Bay area), the Canadian Arctic Archipelago, much of Labrador, all of Greenland, and almost all of Iceland. The subarctic region includes most of Alaska and interior Canada, Newfoundland, and southwestern Labrador. The subarctic area ranges southward to approximately 55° N. latitude in western North America to approximately 45° N. latitude in eastern North America.

3.13.2.3. In Eurasia, the subarctic region ranges southward below arctic areas to approximately 45° N. latitude in eastern Asia and to approximately 60° N. latitude in western Europe.

3.13.2.4. Extremes of temperature are characteristic of portions of the subarctic regions and some of the coldest areas are found here. Temperature ranges of subarctic storage and operational sites must be known so that equipment to be shipped to these areas can be prepared accordingly.

3.13.2.5. Winterization of equipment for operation in extreme cold weather regions requires the use of arctic fuels for gasoline, diesel, or multi-fuel engines; special arctic hydraulic fluids and lubricants (app. A); and the installation of arctic type antifreeze for protection of liquid cooling systems. Initial application of arctic lubricants requires that all components to be lubricated, particularly antifriction bearings, must be thoroughly cleaned to remove previously used lubricants. All materiel requiring initial or subsequent intermittent arctic lubrication will be lubricated in accordance with Department of the Army lubrication orders.

3.13.2.6. Operation in extreme cold weather regions may also require the installation of winterization kits to provide engine and personnel heating systems, operator and crew protection, and to insure reliable starting and efficient performance of equipment.

3.13.2.7. Aircraft require special consideration of fuels and lubricants for performance in extreme cold weather areas. Refer to pertinent series of technical manuals and to applicable references in appendix B for criteria.

3.13.3. Policy

3.13.3.1. When directed, storage activities will install winterization equipment and perform arctic lubrication of equipment and vehicles.

3.13.3.2. The guidance outlined in TM 9-207, in conjunction with other reference data in appendix B and applicable sections of this manual, will be utilized by personnel concerned with shipment preparation, operation, and storage of Army materiel under conditions of extreme cold (0° to −65° F. and below).

3.13.4. Principles

3.13.4.1. Well-drained ground, suitable for year-round operations, should be selected for storage sites. Wherever possible, adequately heated buildings, heated tents, or other covered facilities should be used for storage of supplies. Design of permanent storage and processing buildings should consider provisions for inside loading and unloading of carriers or the use of a protective cover similar to the dock shelter depicted in TM 743-200-2 (fig. 122). Latches, locks, and handholds on doors, etc., should be large enough for usage with a mittened hand.

3.13.4.2. When it is necessary to store supplies or equipment outside, they should be placed on pallets, dunnage, straw, or brush to prevent freezing to the ground. Paulins used for coverings should be kept free of the ground. Vents and openings on equipment should be sealed to prevent entrance of snow and moisture.

3.13.4.3. Emergency standby heating and lighting equipment should be available.

3.13.4.4. Care must be exercised in the handling and operation of equipment as the ability of metals to withstand shock loads in extreme cold temperatures is greatly reduced.

APPENDIX A

SPECIFICATION DATA—WINTERIZATION MATERIAL

MIL-C-11755	Antifreeze, Arctic-Type.
O-A-548	Antifreeze, Ethylene Glycol, Inhibited.
MIL-B-11040	Belt, V: Engine Accessory Drive.
O-E-760	Ethyl Alcohol (Ethanol); Denatured Alcohol; and Proprietary Solvent.
VV-F-800	Fuel Oil, Diesel.
VV-G-76	Gasoline, Automotive.
MIL-G-3056	Gasoline, Automotive, Combat.
MIL-H-13910	Hydraulic Fluid, Polar-Type Automotive Brake, All-Weather.
MIL-H-81019	Hydraulic Fluid, Petroleum Base, Ultra-Low Temperature.
MIL-L-10324	Lubricating Oil, Gear, Subzero.

Note. **For aircraft, see paragraph** 3.13.2.7.

APPENDIX B

REFERENCES

AR 705-15	Operation of Materiel Under Extreme Conditions of Environment.
TM 9-207	Operation and Maintenance of Army Materiel in Extreme Cold Weather (0° to −65° F.).
TM 9-8662	Fuel Burning Heaters for Winterization Equipment.
TM 55-1500-311-25	Army Aviation Maintenance Engineering Manual: General Practices.
TM 743-200	Storage and Materials Handling.
TM 743-200-2	Storage Modernization.
SB 9-16	General Supply: Winterization Kits for Army Tank-Automotive Materiel.
SB 9-160	Nike-Ajax and Nike-Hercules System Winterization Kits and Heating Blankets.
SB 38-8-1	Storage of Army Supplies and Equipment, Covered and Open Storage.
TB 9-2855 Series	Installation of Heaters, Hardtop Closures, and Winterization Kits on Tactical Vehicles (Wheeled).
TB 55-9150-200-25	Engine and Transmission Oils, Fuels and Additives for Army Aircraft.
TB 740-93-2	Preservation of USAMEC Mechanical Equipment for Shipment and Storage.
TB ENG 347	Winterization Techniques for Engineer Equipment.
TB MED 81	Cold Injury.
FM 31-70	Basic Cold Weather Manual.
FM 31-71	Northern Operations.
MIL-V-62038	Vehicles, Wheeled: Preparation for Shipment and Storage of.

CHAPTER 3

STORAGE PROCEDURES

Section XIV. PACKAGING GENERAL SUPPLIES

	Paragraph	Page
General	3.14.1	314-1
Specifications, standards, and instructions	3.14.2	314-1
Levels of protection	3.14.3	314-2
Methods of preservation	3.14.4	314-2
Packing	3.14.5	314-4
Marking	3.14.6	314-10
Remarking superseded stock numbers	3.14.7	314-10
Packaging materials	3.14.8	314-10
Mutual agreements	3.14.9	314-11
Deviations	3.14.10	314-11

3.14.1. General

3.14.1.1. The policies for packaging of materiel by the Army, regardless of where performed, will be in accordance with AR 700-15. Army materiel will be provided protection from damage or deterioration in order to assure serviceable condition from the time of production to the time of use. Adequate protection of Army materiel, according to shipment and storage requirements, will be accomplished in the most economical manner.

3.14.1.2. The definitions and objectives in AR 700-15 and AR 746-1 are applicable to this section.

3.14.1.3. Operational responsibility for the packaging of supplies is with the storage activity. Personnel and facilities necessary for the accomplishment of this function will be provided by the installation commander, and support will be provided by other operating elements of the installation as required.

3.14.2. Specifications, Standards, and Instructions

3.14.2.1. The use of specifications, standards, and instructions for the preparation of general supplies for shipment and storage will be as outlined below. Storage activities will adhere to the design, construction, performance, etc., requirements prescribed in basic materials, methods, and container specifications in the application of detailed packaging requirements.

3.14.2.2. The AMCPSCC Packaging Data Microfilm File (PDMF), a portion of The Army Reader Microfilm System (ARMS) will be used as the principal and basic reference in determining the availability and currency of applicable packaging requirements for items. If a particular item is not covered in the PDMF, the order of precedence will be as follows:

3.14.2.2.1. Detailed packaging specifications and standards.

3.14.2.2.2. Commodity specifications.

3.14.2.2.3. Interim detailed packaging instructions.

3.14.2.2.4. General packaging specifications and standards.

3.14.2.2.5. Department of the Army technical publications (supply bulletins, technical bulletins, technical manuals, etc.)

3.14.2.3. The packaging requirements outlined in the following publications will be used.

3.14.2.3.1. Within the Department of the Army, packaging requirements in specifications, standards, and packaging data sheets/cards are applicable in procurement and CONUS and oversea shipping and storing operations (AR 700-15 and AR 746-1). These requirements normally are associated with procurement and are initially developed and used for this purpose. After procurement, these same requirements are used worldwide by many activities during receiving, storage, care and preservation, reconditioning, and issuing.

3.14.2.3.2. If a particular item is not covered in the PDMF, publications listed below will be used as a source of information:

3.14.2.3.2.1. SB 746-1, Publications for Packaging Army General Supplies.

3.14.2.3.2.2. Department of Defense Index of Specifications and Standards (DODISS). This index is centrally stocked and distributed. Requests for copies should be submitted on DD Form 1425 (Specifications and Standards Requisition) to the Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120.

3.13.2.3.2.3. DA Pamphlet 310-4 (Index of Technical Manuals, Technical Bulletins, Supply Manuals (types 7, 8, and 9), Supply Bulletins and Lubrication Orders) and DA Pamphlet 310-7 (U.S. Army Equipment Index of Modification Work Orders).

3.14.2.4. Need for new or revised publications will be determined as follows:

3.14.2.4.1. Request for changes to packaging requirements determined necessary by Army activities will be referred, through channels, to the AMC Packaging, Storage, and Containerization Center (AMCPSCC), Tobyhanna Army Depot, Tobyhanna, PA 18466.

3.14.2.4.2. The following are considered valid reasons for a change to packaging requirements:

3.14.2.4.2.1. The end use condition of the item is unsatisfactory due to inadequate packaging.

3.14.2.4.2.2. The effects of shipment and handling have caused the package or pack to fail.

3.14.2.4.2.3. Packaging requirements are excessive or uneconomical (AR 746-1).

3.14.2.4.2.4. The packaging and packing materials failed to provide adequate protection.

3.14.2.4.2.5. Improper packaging materials are being used.

3.14.3. Levels of Protection

3.14.3.1. Levels of protection applied to boxed and unboxed general supplies for shipment and storage will be in accordance with AR 700-15. Army materiel packaged at depots for storage and subsequent issue will be provided a level of protection based on anticipated issue requirements.

3.14.3.1.1. Level A protection is required for all International Logistics (IL) shipments except where lower levels have been requested by the Military Assistance Advisory Group in accordance with AR 795-17.

3.14.3.2. The following criteria should be considered in an effort to control repackaging:

3.14.3.2.1. Army materiel in depot stocks, packaged at a higher level of protection, will not be repackaged to provide a lower level of protection merely to adjust the level to the requirements outlined herein or in other directives.

3.14.3.2.2. Army materiel requiring a higher level of protection than that at which it is packaged will be provided the additional protection. However, prior to application of a higher level of protection, consideration will be given to arranging a waiver of the packaging requirements by mutual agreement between shipper and recipient (para 3.14.9).

3.14.3.2.3. Materiel in storage will not be repackaged merely to comply with current or new packaging requirements in data sheets, specifications, instructions etc., except when deterioration or damage to the item is evident or would occur during the expected shipment and storage life of the materiel. When repackaging is required, it will be accomplished to conform to current requirements of the applicable level of protection. However, only those parts of the existing package which are not capable of providing the required level of protection will be corrected.

3.14.4. Methods of Preservation

3.14.4.1. Selection of Preservatives. Of the various preservatives listed in MIL-P-116, volatile corrosion inhibitor (VCI) and oil type preservatives are preferred for the preservation of Army general supplies. VCI treated materials will conform to type I of MIL-P-3420. Only those products listed in QPL-3420 (Qualified Products List) will be used. The use of VCI material will be subject to the technical limitations of MIL-I-8574. Although primers are not treated as preservatives in MIL-P-116, primers conforming to TT-P-644 (or other approved primers for a given product, e.g., MIL-P-46093) will be utilized for the protection of items which normally are painted in end use or do not require removal prior to use. This will preclude the needless application and removal of preservatives or other protective materials. TM 38-230-1 will be used as a guide in the selection and use of preservatives.

3.14.4.2. Preferred Methods and Submethods (MIL-P-116) Considered Adequate to the Majority of Army General Supplies. They will be used whenever practical.

3.14.4.2.1. Method I (figs. 3-7 and 3-18, TM 38-230-1).

3.14.4.2.2. Method IA-8 (fig. 3-25, TM 38-230-1).

3.14.4.2.3. Method IC-1 (fig. 3-36, TM 38-230-1).

3.14.4.2.4. Method III (fig. 3-48, TM 38-230-1).

3.14.4.2.5. Storage activities will package items in accordance with prescribed requirements. In the absence of prescribed requirements, preferred methods indicated above will be used when feasible and practicable. The sequence in which the methods and submethods are listed in MIL-P-116 does not indicate the preferences of one over another.

3.14.4.2.6. Method II packaging (para 3-24, TM 38-230-1).

3.14.4.2.7. Method II packages will be accomplished in accordance with MIL-P-116 (utilizing TM 38-230-1 as a guide), and only on general supplies meeting one or more of the following criteria:

3.14.4.2.7.1. Items of a critical or complex nature requiring protection from the effects of water vapor.

3.14.4.2.7.1.1. Items which cannot be treated with preservatives because of their nature or because of the cost of depreservation.

3.14.4.3. Unit Packages.

3.14.4.3.1. Only those items and assemblies of items having the same stock number will be placed in the same unit package.

3.14.4.3.2. The quantity of an item to be included in the unit package will be in accordance with applicable package data sheets, specifications, or instructions.

3.14.4.3.3. When packaging methods or submethods require the use of a container as part of the unit protection (methods requiring specific containers exempted), or when it is necessary to supplement such methods or submethods with containers for storage and handling purposes, container selection and closure will be in accordance with the requirements of table 1. Non-weather-resistant unit containers will be used only when inclosed in a waterproof bag (sealed) or a moisture vapor-proof bag (sealed). Method I and III containers must be weather-resistant type material.

3.14.4.3.4. When it is more economically practicable to accomplish method I or method III by using a bag (for the purpose of identifying, containing, or handling of items), the closure may be effected by any means. Waterproof bags must be used for these methods for level A or B unit packages, unless equivalent unit protection of items is provided by other supplemental means.

Table 1

Specification	Title	Use and/or closure requirements
PPP-B-26	Bag, Plastic, Polyethylene	See note 1
PPP-B-566	Boxes, Folding, Paperboard	See notes 2, 3, and 4
PPP-B-636	Boxes, Fiberboard	See note 5
PPP-B-665	Boxes, Paperboard, Metal Stayed (including stay material) Class 1	See notes 2, 3, and 4
PPP-B-665	Class 2	See notes 2 and 3
PPP-B-676	Boxes, Set-up	See notes 2, 3, and 4
PPP-S-30	Sacks, Shipping Paper (Cushioned)	See note 1
MIL-B-117	Bags and Sleeves, Interior Packaging	See note 1
MIL-B-43014	Boxes, Water-Resistant Paperboard Folding, Set-Up, and Metal Stayed.	See notes 2 and 3

Note 1. Closure may be by any adequate means, except when specified otherwise for a given method. For MIL-B-117 bags, net weight of contents will not exceed 10 pounds, except that there are no weight restrictions for the following bags: type 1, class B, style 2; type 1, class C, style 2; and type 1, class E, styles 1, 2 and 3.

Note 2. Use only when weight of contents is as prescribed in applicable container specification.

Note 3. Closure will be accomplished as specified in the applicable specification.

Note 4. Waterproof or water-vaporproof barrier required for level A and B unit packages, unless equivalent unit protection of items is provided by other supplemental means.

Note 5. For class domestic boxes, use UU-T-106 or PPP-T-45 tape and for class weather-resistant boxes use PPP-T-76 tape. Closure will be accomplished with one strip applied full length to the bottom seams or as specified in the appendix of PPP-B-636. If the bottom of the box is closed with staples or adhesive (or a style of the one piece folder (OPF) box is used), only a single strip of tape is required on the top seam. When a unit or intermediate container is used as an exterior, closure will be in accordance with note 5, table 2, of this manual or with PPP-B-636.

3.14.4.4. Intermediate Packaging.

3.14.4.4.1. MIL-P-14232 prescribes requirements for intermediate containers.

3.14.4.4.2. Only unit packages containing items of the same stock number will be placed in the same intermediate container. The consolidation of more than one line item of a basic issue item (BII) into an intermediate package is an exception.

3.14.4.4.2.1. Intermediate containers will be used when the exterior surfaces of the unit package is a bag of any type regardless of the size, unless the unit package is supplemented by a fiberboard container or the bag meets the requirements for exterior containers appropriate to the particular level of protection or the unit package is less than 64 cubic inches.

3.14.5. Packing

3.14.5.1. General Requirements for Exterior Containers.

3.14.5.1.1. Exterior containers which contain items of the same stock number will have like dimensions, like quantities, and will be packed not to exceed the maximum prescribed weight limitations indicated in the specification of the container used. Materiel in stock will not be repacked to meet these requirements.

3.14.5.1.2. Individual exterior containers will contain only items of the same stock number. Excluded are containers for BIIs, sets, assemblies, special projects, and consolidation (multipack) purposes.

3.14.5.1.3. When the quantity of a single line item to be packed requires more than one individual exterior container, the containers used will be of like size and will be packed with uniform quantities to the greatest extent practicable. The size of the exterior container and the pack quantity will be prescribed in packing requirements whenever it is likely that procurement and distribution of such quantities will occur. Materiel in stock will not be repacked for the sole purpose of complying with this requirement.

3.14.5.1.3.1. Where possible, exterior containers of a size that will accommodate the greatest number of items in the least number of containers, within the weight and dimensional limitations of the applicable container specifications, will be prescribed and used. Excluded are those single item unit packs where the container constitutes a part of the unit pack.

3.14.5.1.4. Consolidation containers will be used for quantities of small lightweight items which are packaged to the required level of protection and shipped to one activity address. Consolidation containers, when feasible are economical, will be used for shipment of supplies and materiel when it is impossible to use a palletized unit load. All items, packages, and packs using consolidation containers must be for a single consignee. Shippers will select consolidation containers that are designed to provide protection against the type of hazards to be encountered during shipment from origin to destination. Containers used will be of minimum tare weight, cube, and cost which will provide this protection. The total quantity of the same line item (unit and intermediate packages) will be consolidated (by bagging, taping, wrapping, cartonizing, etc.) and identified before being placed in a consolidation container. DD Form 1348-1 (DoD Single Line Item Release/Receipt Documents) may be used to identify the materiel when consolidated by one of the methods described above.

3.14.5.1.4.1. Consolidation containers shipped within CONUS will, when appropriate, conform to Federal and military specifications. In the absence of such prescription, containers will, as a minimum, conform to applicable carrier rules and regulations.

3.14.5.1.4.2. Fiberboard consolidation containers will not be prescribed and used for level A shipment and storage conditions, but weather-resistant fiberboard will be acceptable for level B packing under the performance criteria and application guideline established in AR 700-15.

Those fiberboard containers prescribed for level A packing in specifications, standards, data sheets, etc., will continue to be used for oversea shipments to those geographical areas where experience with shipping modes and storage environmental conditions at destination, representative of level B, confirm their performance as satisfactory.

3.14.5.1.5. Use of case liners and shrouds will be based on the following criteria:

3.14.5.1.5.1. Waterproof barriers such as crate liners and shrouds are primarily intended to protect packed materiel by shedding free water. In addition, when properly used, waterproof barriers afford a degree of protection from dust, dirt, and other foreign matter.

3.14.5.1.5.2. Case liners will only be used when specified in the applicable packaging requirements for the item.

3.14.5.1.5.3. Crate-panel liners will be used in lumber-sheathed crates to shed water from the top, sides and ends of the crates. Crate liners are an integral part of the crate panels. Side and end panel liners will be fabricated from waterproofed paper conforming to PPP-B-1055, MIL-B-121 and MIL-B-13239. The top panel liner material will be roofing felt conforming to SS-R-501.

3.14.5.1.5.4. Shrouds (figs. 6-19 and 6-20, TM 38-230-2) are used to protect items in unsheathed crates, pallet boxes, on skid bases, etc., by shedding water from the top, sides, and ends of the items. Shrouds will be fabricated from waterproofed materials such as those conforming to PPP-B-1055 or others such as polyethylene sheeting (minimum thickness—4 mils). The shroud will hang free whenever possible without the use of binding ties, and will extend to within approximately 6 inches of the base of the container. When multiple pieces of PPP-B-1055 barrier are used to fabricate a shroud, seams will be sealed with water-resistant adhesive conforming to MMM-A-260. Shrouds will be secured, weighted if necessary, and arranged to avoid formation of water pockets, and damage or loosening by winds.

3.14.5.1.5.5. When using case liners or shrouds, all sharp points of contact between the item and barrier will be cushioned with cushioning material listed in SB 746-1 to prevent rupture of chafing of the barrier.

3.14.5.1.6. Tare weight and cube are the "yardsticks" for measuring shipping costs. Cube is extremely important in storage and transportation. Excess weight and cube resulting from oversize containers, void space, unnecessary cushioning, blocking, etc., constitute excessive packaging (AR 746-1).

3.14.5.1.6.1. Disassembly to reduce overall dimensions is a means of saving cube. However, full consideration must be given to the cost of disassembly, cost of reassembly, availability of space and cost of labor to pack removed equipment, and possible damage to materiel resulting from removal and reassembly. Disassembly of the item, to reduce cube or provide needed protection, will be held to the minimum and will assure that functioning of the item will not be impaired and reassembly can be readily accomplished without the use of special tools or skills.

3.14.5.1.6.2. Comply with material requirements and fabrication instructions in container and methods specifications.

3.14.5.1.7. Cushioning, blocking, and bracing will be applied as follows:

3.14.5.1.7.1. Cushioning, blocking, and bracing used in exterior containers will be capable of passing the applicable tests cited in MIL-STD-1186. Detailed information concerning the purpose, selection, and application of cushioning, blocking, and bracing in containers is provided in TM 38-230-2.

3.14.5.1.7.2. Cushioning, blocking or bracing will be used to prevent undesirable movement of items, unit packages, or intermediate packages packed in boxes. Fragile items will be cushioned, blocked, or braced and secured, when appropriate, so that the items will not be damaged by shock or vibration.

3.14.5.1.7.3. Crated items will be secured, cushioned, blocked, or braced so that the items will not move in any direction within the crate. Generally, fragile items will be similarly treated to prevent damage from shock or vibration. Top-heavy items will be supported, blocked, or braced in such a manner that the items will not be damaged by shock or by unequally distributed weight. Whenever possible, blocking and bracing will be fastened to the base of the crate.

3.14.5.1.7.4. Supports, blocking, and bracing will be used to prevent container distortion from damaging the packed item.

3.14.5.2. Selection and Use of Exterior Containers.

3.14.5.2.1. Adequate protection at minimum cost will be the controlling factor in selecting exterior containers. Selection will be guided by the following:

3.14.5.2.1.1. The degree of protection required for the item.

3.14.5.2.1.2. Physical characteristics of the item or type of load to be contained.

3.14.5.2.1.3. Initial cost of the container.

3.14.5.2.1.4. Weight and cube of the container.

3.14.5.2.1.5. Simplicity and economy of assembly and closure.

3.14.5.2.1.6. Handling and storage advantages of the container.

3.14.5.2.1.7. Availability of container for normal or emergency needs.

3.14.5.2.1.8. Level of packaging design and performance criteria outlined in AR 700-15.

3.14.5.2.1.9. Disposition of the item in an unserviceable state (recoverable, reparable, returnable, etc.) as affects the reusability features required in containers.

3.14.5.2.1.10. Known or anticipated distribution plans for the item (wholesale, retail, or selective distribution as dictated by end use).

3.14.5.2.2. The individual exterior container types listed in table 2 represent general purpose containers which have level A or B protection and performance capabilities for Army application as identified by the letter "X" in the applicable column(s) or as otherwise qualified by explanatory notes.

Table 2

Specification	Title	Level A	Level B
UU-S-48	Sacks, Shipping, Paper	X[1]	X[2]
PPP-B-35	Bags, Textile, Shipping, Burlap Cotton and Waterproofed Laminated	X[1]	X[2]
PPP-B-41	Barrels, Wood, Slack	X	X
PPP-B-576	Boxes, Wood, Cleated, Veneer, Paper Overlaid		X
PPP-B-585	Boxes, Wood, Wirebound	X[3]	X[3]
PPP-B-587	Boxes, Wood, Wirebound Pallet Type	X	X
PPP-B-591	Boxes, Fireboard, Wood-Cleated	X[1,5]	X
PPP-B-601	Boxes, Wood, Cleated Plywood	X	X
PPP-B-621	Boxes, Wood, Nailed and Lock Corner	X[6]	X[6]
PPP-B-636	Box, Fiberboard	X[1,4,5]	X[7]
PPP-B-640	Boxes, Fiberboard, Corrugated Triple-Wall	X[1,5]	X[7,8]
PPP-B-1163	Box, Corrugated Fiberboard, High Compression Strength, Weather-Resistant, Wax Resin Impregnated.	X[1,5]	X[7]
PPP-B-1364	Box, Corrugated Fiberboard, High Strength, Weather-Resistant, Double-Wall.	X[1,5]	X[7]
PPP-C-650	Crates, Wood, Open and Covered	X	X
PPP-D-700	Drums: Metal, 55-Gallon (For Acid and Corrosive Liquids)	X	X
PPP-D-705	Drum, Metal Shipping, Steel (Over 12 and Under 55-Gallon)	X	X
PPP-D-723	Drums, Fiber	X	X
PPP-D-729	Drums, Metal, 55-Gallon (For Shipment of Non-Corrosive Materiel)	X	X
PPP-P-704	Pails, Metal (Shipping, Steel 1 through 12-Gallon)	X	X
PPP-S-50	Sacks, Shipping, Paper, Reinforced	X[1]	X[2]
MIL-B-17757	Boxes, Fiberboard, Corrugated (Modular Sizes)	X[1]	X[7]
MIL-B-26195	Boxes, Wood-Cleated, Skidded Load-Bearing Base	X	X
MIL-B-26241	Boxes, Demountable, Assembled with Fasteners Other Than Nails and Screws.	X	X
MIL-B-40030	Drums, Plastic, Molded Polyethylene	X	X
MIL-B-43666	Boxes, Shipping Inserts, Consolidation	X[3]	X[3]
MIL-C-104	Crates, Wood; Lumber and Plywood-Sheathed, Nailed and Bolted	X	X
MIL-C-3774	Crates, Wood; Open, 12,000 and 16,000-Pound Capacity	X	X
MIL-C-9897	Crates, Slotted-Angle, Steel or Aluminum, for Lightweight Airframe Components and Bulky Items (For Maximum Loads of 3,000 pounds).	X	X
MIL-C-11133	Crate, Wood, Open Wirebound	X[3]	X
MIL-C-22806	Crates, Sheathed, Wood, Wirebound	X	X
MIL-D-6054	Drum, Metal; Shipping and Storage	X	X
MIL-P-9902	Panels, Full-Cleated; Partially Cleated and Uncleated; Plywood, Veneer Paper-Overlaid and Solid Fiberboard for Box, Modular Systems.	X[3,6,7]	X[3]

---

[1] For level A packaging applications when supplemented by exterior protection of a unitization method and consigned to a user organization. When overpacked in containers or palletized unit load configurations, paper sacks and

fiberboard boxes assume a unit or intermediate package status. Prescribe appropriate unit loading provisions when supplemental level A protection for shipment, handling and storage is required under such circumstances.

[2] Only weather-resistant or waterproofed sacks or bags will be used when prescribing sacks or bags as the unit/exterior container for appropriate items.

[3] When prescribed or used, wirebound boxes conforming to style 2 or 3 of PPP-B-585 and designed for type 3 loads, class 3 use, will be considered as preferred to packing Army materiel. Veneer, paper-overlaid, as described in paragraph 3.1.3 of PPP-B-585 will not be used for level A. Style 1 wirebound boxes or crates may be used when issue and inspection requirements do not require the box to be opened prior to use of contents. Wirebound boxes designed for type 1 and 2 loads, and those requiring special design for specific items, may be used when prescribed by the packaging activity.

[4] For limited types of items within certain classes of supply, packaging activities are permitted to design exterior containers utilizing PPP-B-636 weather-resistant solid fiberboard, minimum grade V2S of PPP-B-636 or VOC of Interim purchase description IP/DES S-30-8 for level A packing. Containers so designed and prescribed for such application will meet the design and performance criteria for level A packs in AR 700-15. Their use is further limited by the following application restrictions:

(1) Not permitted for type 3, difficult loads. Conversion of a type 3 load to a type 1 or 2, by supplemental internal pack design features, is permitted.

(2) Maximum gross weight (container and contents) will not exceed 70 pounds for type 1 loads and 60 pounds for type 2 loads.

(3) Use is intended principally for high volume (procurement, distribution, or consumption) fast turnover packaged items such as subsistence, clothing, and petroleum, oil, and lubricants (POL).

[5] Style E and G boxes conforming to class 2 of PPP-B-640 may be used for packs weighing up to 1,000 pounds and 2,000 pounds, respectively. Wood pallet bases conforming to type IV, size 2, NN-P-71 will be provided when the load exceeds 200 pounds or when length and width dimensions of containers are 48 by 24 inches (or more) and weight in excess of 100 pounds. In addition, style E of PPP-B-640, variety double-wall grades V11C, V13, and V15C of PPP-B-636, variety double-wall style RCS of PPP-B-1364 and PPP-B-1163 may be used for packs weighing up to 1,500 pounds, providing they are consolidation containers destined to one consignee, loaded at source in MILVAN or seavan and are shipped on pallets. The styles inuicated in MIL-B-43666 may be used for packs weighing up to 2,500 pounds also subject to the above requirements.

[6] When prescribed or used, nailed wood boxes conforming to style 4 of PPP-B-621 for weight of contents not exceeding 400 pounds will be considered as preferred for packing Army materiel. For purpose of economy, lumber meeting the minimum thickness specified by the container specification will be used in lieu of the general practice of using ¾-inch thick lumber throughout.

[7] Use subject to following restrictions which may not be established by the container specification.

(1) Domestic (nonweather-resistant) grades of fiberboard or other nonweather-resistant materials are not permitted for applications which would subject loose containers to open, shed or unknown storage or water shipment outside of containerization media.

(2) Not permitted for type 3, difficult loads unless converted to a type 1 or type 2 load.

(3) Maximum loads allowable by specification requirements apply except that single wall corrugated fiberboard will not be used for load gross weights exceeding 90 pounds for type 1 load and 70 pounds for type 2 load; doublewall for load weights exceeding 160 pounds; and triple-wall for load weights not exceeding 275 pounds. The load limit may be increased to 225 pounds for double-wall and 350 pounds for triple-wall providing the manufacturer's joint is stitched in accordance with special requirements in section 12, rule 41, Uniform Freight Classification 9. They will be pallet mounted in accordance with note 5.

[8] Fiberboard boxes are restricted to CONEX, MILVAN/seavan for level A oversea shipments, however, they may be used as shipping containers for level B oversea shipments and domestic consolidation boxes.

3.14.5.2.3. Fiberboard boxes (sec 2, TM 38-230-2) will be used as follows:

3.14.5.2.3.1. Weather-resistant, fiberboard boxes will be used for level A or level B, providing they meet the design and performance criteria and application guidelines set forth in AR 700-15 and table 2 of this manual.

3.14.5.2.3.2. Fiberboard boxes for level C exterior containers will, when appropriate, conform to Federal and military specifications. In the absence of such prescription containers will, as a minimum, conform to applicable carrier rules and regulations.

3.14.5.2.3.3. Closure of boxes conforming to PPP-B-636 will be accomplished in accordance with the appendix thereto. Intermediate PPP-B-636 boxes already secured with one strip of PPP-T-76 tape on the center seam may have two strips of 2-inch wide tape conforming to PPP-T-60 or PPP-T-45 applied across the top and bottom flap and edge (without overlapping on the sides) of the box to meet the closure requirements for exterior containers for CONUS shipments.

3.14.5.2.4. Nailed wood boxes (para 3-2, TM 38-230-2) will not be used to ship Army materiel level B when more economical containers, of less tare weight and cube, can be used to provide effective protection during shipment or storage. Consignee requests for nailed wood boxes or similar wooden containers for shipment to a particular geographical area outside CONUS or for a particular commodity due to environmental, shipping, storage, or security consideration will be honored when experience or other overriding factors justify the requirement. When used, nailed wood boxes conforming to PPP-B-621 will be style 4 unless otherwise specified in a packaging data sheet, specification, or instruction.

3.14.5.2.5. Exterior containers will be strapped (or reinforced) in accordance with instructions contained in the appendix to the applicable container specification, except as follows:

3.14.5.2.5.1. PPP-B-621 class 1 (except styles 1 and 6) and class 2 containers not exceeding 220 pounds gross weight when packed with type 1 or 2 load (fig. 4, TM 38-230-2) need not be strapped for CONUS shipments.

3.14.5.2.5.2. PPP-B-621, class 1 (except styles 1 and 6) and class 2 containers not exceeding 125 pounds gross weight when packed with a type 3 load (fig 4, TM 38-230-2) need not be strapped for CONUS shipments.

3.14.5.2.5.3. Strapping of containers will not be required for shipments made from one consignor to one ultimate consignee when shipment is in MILVANS/seavans.

3.14.5.2.5.4. Strapping of containers comprising a palletized unit load will not be required.

3.14.5.2.5.5. Staples will not be used on strapping except when specified.

3.14.5.2.6. The container specification number, manufacturer's name and address, applicable use, etc., prescribed on an "unless otherwise specified" basis in wood box PPP-B-585, PPP-B-601, and PPP-B-621 are required only on assembled or knocked-down boxes procured from box manufacturers. These markings are not necessary on boxes fabricated locally by depots or contractors for the shipment of their supplies.

3.14.5.2.7. Exterior containers for parcel post will be in accordance with the following:

3.14.5.2.7.1. For CONUS parcel post shipments, any container capable of meeting postal regulations may be used (i.e., any container strong enough to retain and protect its contents from the weight of other mails). Cloth mailing bags are permissible for packing unbreakable items provided projections are cushioned to prevent rupture of the bag during shipment.

3.14.5.2.7.2. Containers for oversea parcel post shipments will conform to applicable weather-resistant containers listed in paragraph 3.14.5.-2.2. and the following:

3.14.5.2.7.2.1. PPP-S-30 (Sacks, Shipping, Paper, Cushioned).

3.14.5.2.7.2.2. PPP-B-200 (Bags, Cotton, Mailing).

3.14.5.2.7.2.3. PPP-B-636 (Box, Fiberboard) class domestic fiberboard containers are acceptable for level C shipments destined for immediate use.

3.14.5.2.7.3. Registered parcel post shipments will not be made solely for accounting and tracing purposes. Registration will only be used when warranted by the value or sensitivity of materiel.

3.14.5.2.7.3.1. Fiberboard containers used for registered shipments will be completely sealed with type III, class 2 (nonstrippable) PPP-T-45 tape. Pressure-sensitive tapes are not acceptable by the Post Office Department for sealing registered mail.

3.14.5.2.7.4. Every effort will be made to keep the weight and size of exterior containers to a minimum and still provide the cushioning, blocking, or bracing required to prevent damage to items. The use of lightweight exterior containers to facilitate consolidation when a number of small containers are addressed to the same consignee and destination is desirable.

3.14.5.2.7.5. Flat items may be positioned between sheets of material prescribed in PPP-F-320 and UU-C-282. The sides should be stapled or taped.

3.14.5.2.7.6. Consolidation of parcel post shipments destined to the same consignee should be effected to the maximum extent practicable.

3.14.5.2.8. Reusable containers (excluding those conforming to MIL-B-11886) are used when the characteristics and use of a particular item are such that a reusable type container is economically and logistically practicable. This determination is made by the responsible commodity manager and is specified in applicable packaging requirements. The application and maintenance of reusable containers will conform to the following:

3.14.5.2.8.1. Only one item should be contained in a reusable container.

3.14.5.2.8.2. Reusable containers will be constructed to insure that weight and cube is held to the minimum practicable, yet will affort required protection to the item.

3.14.5.2.8.3. Disassembly of the contained item, when feasible, to reduce cube or to provide needed protection will be sure that the functioning of the item will not be impaired, and reassembly can be readily accomplished without the use of special tools or skills.

3.14.5.2.8.4. Items will be blocked, cushioned, or secured to prevent damage to container or contents through shock or vibration. When necessary, due to the weight of the item, mounting devices adequately fastened to the container will be used.

3.14.5.2.8.5. Metal reusable containers will be painted as specified by the applicable container specification. Wooden, reusable containers will not be painted except when repainting is necessary for international logistics shipments.

3.14.5.2.8.6. Wooden containers constructed with removable tops will be provided with lifting devices to lift top when specified in the applicable specifications. Appropriate caution marking will be applied. Lifting devices on metal containers will be so designed and attached that they are capable of lifting the container and contents, will not increase the cube, and will not interfere with stacking.

3.14.5.2.8.7. Ventilation will be provided in fully inclosed containers (except dehumidified or pressurized containers) in accordance with MIL-C-104, unless otherwise specified in a detailed container instruction.

3.14.5.2.8.8. Closure of wood, metal, or plastic reusable containers will be accomplished by any effective means that will permit ease of reopening and reclosure (screws, bolts, etc.).

3.14.5.2.8.9. When reusable containers exist for specific items (engines, transmissions, etc.), these will be used. Reusable containers for other appropriate items will be constructed in accordance with MIL-C-104, MIL-C-3774, PPP-C-650, PPP-B-601 and PPP-B-621 as applicable. Skids or rubbing strips will be used on large or heavy containers to permit easy handling with slings or forklifts.

3.14.5.2.8.10. Wood containers will be maintained by repairing or replacing damaged nut plates, structural members, corner straps, interior blocking, ventilators, holddown brackets, bolts, etc. Painting will not be required except as prescribed in 3.14.5.2.8.5. If the framework of the container is in good condition, the tops, sides and ends of the container may be renovated by covering the deteriorated sheathing with plywood.

3.14.5.2.8.11. For identification, reuse and control of the containers (AR 725-1) the marking "Reusable Container—Do Not Destroy" will be applied in suitable sized letters in a prominent location on each reusable container.

3.14.5.2.8.12. Care and maintenance of metal containers will be in accordance with TB 9-289 and TM 38-230-2.

3.14.5.2.8.13. Additional publications on reusable type containers can be found in the references cited in paragraph 3.14.2.3.2.

3.14.5.3. Palletized Unit Loads. (fig 3-45, sec. 3, para 3-15, TM 38-230-2, and AR 746-1.)

3.14.5.3.1. The methods, materials, and techniques to be used in palletizing general supplies for shipment on standard, general-purpose pallets (40 × 48 in.) will be in accordance with MIL-STD-147 and this manual. See AR 746-1 for additional guidance.

3.14.5.3.2. A standard 40- by 48-inch, 4-way entry, wing type, softwood pallet conforming to type IV, size 2, NN-P-71, will be used for constructing palletized unit loads. This pallet is available in the supply system and is listed by FSN 3990-935-7960.

3.14.5.3.3. Items in containers or unpacked items of uniform or assorted sizes will be palletized into unit loads or containerized into unit loads for surface and air shipment when there is a sufficient quantity of item(s) moving to a single destination. Nonstandard palletized unit loads will also be prepared for those containers or unpacked items which, due to the physical characteristics of the containers or items, provide an economical and practicable handling, shipping, or storing method for such containers or items.

3.14.5.3.4. Palletized or unitized loads should not exceed 54 inches in height or 43 inches in length which permits an overhang of 1 1/2 inches at each end, and 52 inches in width, which permits an overhang of 2 inches on both sides. The weight limitation including pallet for domestic or overseas shipment will not exceed 3,000 pounds as prescribed in MIL-STD-147.

3.14.5.3.4.1. Palletized unit loads will not exceed 41 inches in height for MILVAN shipments; 43 inches in height for seavan shipments and 54 inches in height for noncontainerized shipments. Materiel previously palletized to 54 inches need not be repalletized to meet this requirement. An overhang is not permitted for palletized unit loads prepared for shipment in seavans and MILVANS. The length will not exceed 40 inches and the width will not exceed 48 inches.

3.14.5.3.4.2. Weight and overall dimensional limitation of palletized or unitized loads will conform to MIL-STD-147 except when item or container characteristics prohibit and as otherwise specified in separate directives for a designated application, commodity, mode of shipment, or geographical area.

3.14.5.4. Containerization Media (CONEX, MILVAN/seavan).

3.14.5.4.1. Containerization media provide supplemental protection for the material shipped therein. The level of packing protection for the materiel specified in AR 700-15 will be reduced to level C when such reduction does not compromise the protection required for the items in transit or after removal from the containerization media.

3.14.5.4.2. Intermediate unitization, by means of palletized unit loads and consolidation containers will be accomplished for shipments in vans or trailer service wherever the type and quantity of commodities and exterior containers will permit. See 3.14.5.3.4.1. for overall height limitations.

3.14.5.5. Packing for Air Shipment (TM 38-236).

3.14.5.5.1. Minimum tare weight and cube will be a major consideration in preparing Army supplies for air shipment. When it is known prior to packing that a shipment is to be made by air, packing will conform to TM 38-236 and TM 38-250. The level of packing protection for the materiel specified in AR 700-15 will be reduced to level C where such reduction does not compromise the protection required for the items in transit or after removal from the aircraft and long term storage.

3.14.5.5.2. Factors to be considered in the packaging of materiel to facilitate air transportability are contained in AR 705-35.

3.14.6. Marking

3.14.6.1. Basic minimum identification for interior containers unpackaged, and unpacked items, palletized loads, and shipping containers will conform to minimum requirements specified by MIL-STD-129.

3.14.6.2. Address and special markings are outlined in MIL-STD-129, DoD Regulation 4500.-32-R and shipping orders.

3.14.6.3. Marking for air shipments will be in accordance with MIL-STD-129 and TM 38-250.

3.14.6.4. Marking of International Logistics shipments will be in accordance with AR 725-50 and MIL-STD-129.

3.14.6.5. Marking requirements for identification and control of shelf-life items within or entering the supply system are prescribed in AR 700-1 (item data segment) and MIL-STD-129.

3.14.7. Remarking Superseded Stock Numbers

When shipping materiel with superseded stock numbers, the current stock number will be shown on the exterior container. It will not be required to change stock numbers on each packaged container therein, if the exterior container is shipped from stock without opening. However, if packages or items are removed from containers, they will be marked at time of removal to assure that the correct stock number (item description), is shown at time of issue.

3.14.7.1. When interior packages are identified by superseded stock numbers, a label will be applied SUPERSEDED LABEL (DA Label 142) to the exterior container. The label will read as follows: "Stock number on interior packages has been superseded by the number shown on this container."

3.14.7.2. DD Form 1348-1 will be used to show correct stock numbers of interior packages in multipack containers. This alleviates the requirement for correcting stock numbers on containers removed from packs. Copy of the form will be attached to the pertinent package.

3.14.8. Packaging Materials

3.14.8.1. Packaging materials are those materials that are related to cleaning, preserving, cushioning, barriers, marking, unitization, such as containers and their components, adhesives, tapes, straps, blocking, and desiccants.

3.14.8.2. The selection of packaging materials will be governed by the following criteria:

3.14.8.2.1. Compatability and suitability of the materials to provide the degree of protection required for the item and to assure the proper function of the package or pack.

3.14.8.2.2. Packaging materials that will afford simplicity and economy of application; i.e., mechanical versus manual application, preservatives that need not be removed in the installation of items or those that afford ease and economy in removal under field conditions; least expensive but adequate materials, that afford standardization in the packaging of like or similar items thereby affording a reduction in types, grades and classes of materials.

3.14.8.3. Requirements for the use of packaging materials will be as follows:

3.14.8.3.1. Packaging materials will be used in accordance with the requirements of MIL-P-116 and other specifications and instructions listed in SB 746-1.

3.14.8.3.2. Workmanship employed in the use of packaging materials will be such that completed packages will be capable of passing the tests prescribed in MIL-P-116 and MIL-STD-1186 or in applicable packaging or commodity specifications and instructions.

3.14.8.4. Packaging materials utilized in the protection of general supplies will conform to applicable specifications and instructions. The testing or certification of packaging materials, at the time of procurement, is the responsibility of the procuring agency. The minimum testing normally is prescribed in material specifications to insure that the essential properties of the materials are met. Testing at the time of procurement alone does not insure that packaging materials, when eventually put into use, will be of suitable quality. Substandard materials may reach using activities before deficiencies are not detected during procurement testing or the product may have deteriorated while in the possession of a supply agency or the user. Despite the material and performance requirements established for packaging materials, some, because of their physical characteristics, are more susceptible to deterioration while in storage than after application. For this reason, the serviceability of packaging materials is dependent to a great extent on proper storage and rotation of stocks. When assistance is required to determine serviceability of packaging materials, contact the AMC Packaging, Storage, and Containerization Center, Tobyhanna Army Depot, Tobyhanna, PA 18466.

3.14.9. Mutual Agreements

3.14.9.1. Prescribed packaging requirements may be waived when mutual agreement is reached between depots and recipients.

3.14.9.2. A mutual agreement is a one-time understanding reached between the requisitioner and the shipper authorizing the shipment of items with a lower level of protection than required by AR 700-15. When such agreements are reached, the lower level of protection will not compromise material serviceability or require subsequent upgrading of protection by an intermediate or requisitioning activity for storage or redistribution.

3.14.10. Deviations

3.14.10.1. CONUS storage activities will request approval for major packaging deviations from the AMC Packaging, Storage, and Containerization Center, Tobyhanna Army Depot, Tobyhanna, PA 18466. Requests can be made by telephone, teletype, letter or personal messenger as the degree of urgency dictates.

3.14.10.2. A major deviation constitutes a change involving deviation from packaging policy established by AR's, MIL-STD-129, and DOD directives or the application of a lower degree of protection than provided by established packaging requirements.

3.14.10.2.1. A minor deviation constitutes a change in established packaging requirements which does not affect the basic method or submethod prescribed by established packaging requirements or conflict with policy established by regulations (examples include substitution of materials which are equal to (or better than) those prescribed).

3.14.10.2.2. CONUS depots will coordinate proposed major deviations in packaging requirements or applications, through their quality assurance activities, with AMCPSCC. When deviations are required and personnel cannot be contacted (i.e., after duty hours, weekends) the depot requesting the deviation will determine applicability based on available experience and good judgment. In these instances, depot authorized deviations will be recorded and a copy of authorization (including details) immediately forwarded to AMCPSCC.

3.14.10.2.3. CONUS depots will determine locally the applicability of minor deviations based on good judgment and available experience. Substitution of materials (barriers, preservatives, etc.) will be acceptably only when it is definitely known that the material substituted is equal in performance to that required by established packaging requirements. In all instances, minor deviations that may result in a recommendation for a permanent change in established packaging requirements will be brought to the attention of AMCPSCC for necessary action.

3.14.10.3. Approval, when given will be on a one-time basis. The procedures herein do not apply to permanent changes in packaging publications. When the need for a change to a publication is apparent, a separate request should be forwarded in accordance with paragraph *3.14.2.4*.

3.14.10.4. Data to be furnished by CONUS depots to AMCPSCC, when requests for packaging deviations are made, will include the stock number and item nomenclature, quantity, cube, and weight of exterior container, kind of shipment such as CONUS, IL, for storage, issue priority, level of protection, etc.

3.14.10.5. Deviation approval notice.

3.14.10.5.1. Packaging deviation approval will be annotated on the shipping document of the material covered by the deviation. The document will be marked as follows: PKG, DEV APPR, AMCPSCC (month and year).

3.14.10.5.2. Deviations in the preparation (preservation) of unboxed or uncrated vehicles and equipment will be indicated on the two copies of DD Form 1397 (Processing and Deprocessing Record for Shipment, Storage and Issue of Vehicle and Spare Engines) used by US Army Tank-Automotive Command (TACOM) or two copies of DA Form 2258 Depreservation Guide for Vehicles and Equipment) used by Troop Support Command (TROSCOM) accompanying unboxed or uncrated materiel shipped by depot. Notations should be brief, understandable, and descriptive of the deviations involved. In addition, the authority and date of approval will be shown on the form.

CHAPTER 3

STORAGE PROCEDURES

SECTION XV. SECURITY OF MATERIALS IN STORAGE

	Paragraph	Page
Purpose	3.15.1	315-1
Definitions	3.15.2	315-1
General	3.15.3	315-1
Policy	3.15.4	315-2
Responsibilities	3.15.5	315-2
Classified materiel	3.15.6	315-2
Pilferable and sensitive items	3.15.7	315-3
Appendix		315-A-1

3.15.1. Purpose

This section establishes the security requirements for the storage and handling of classified., pilferable, and sensitive items (excluding small arms). See section XII of this chapter for special small arms security and control procedures.

3.15.2. Definitions

Terms used in this section are defined in AR 310-25. To provide a clear understanding of this section, however, the following definitions are provided:

3.15.2.1. Classified Materiel. Materiel which requires protection in the interest of national security.

3.15.2.2. Limited Area. A restricted area containing a security interest or other matter in which uncontrolled movement will permit access to such interest or matter, but within which access can be prevented by escort and other internal restrictions and controls.

3.15.2.3. Pilferable Materiel. Materiel having a ready resale value, or civilian application as to personal possession, and is therefore especially subject to theft (i.e., watches, certain tools, and clothing).

3.15.2.4. Physical Security. That part of security concerned with physical measures designed to safeguard personnel, to prevent unauthorized access to equipment, facilities, material and documents, and to safeguard them against espionage, sabotage, damage and theft.

3.15.2.5. Physical Security/Pilferage Code. A single character alphabetic code which indicates the security classification of pilferage control appropriate to the item to which is assigned.

3.15.2.5.1. These codes appear in the Army Master Data File (AMDF) (chap 7, AR 708-1) and should be part of the installation item data records.

3.15.2.5.2. Items not assigned a code in the AMDF, but for which the storage activity justifies security considerations based on experience, may also be coded and afforded special security protection.

3.15.2.6. Restricted Area. Any area, access to which is subject to special restrictions or controls for reasons of security or safeguarding of property or materiel.

3.15.2.7. Sensitive Items. Materiel which requires a high degree of protection due to its characteristics (i.e., fragile, delicate, hazardous to materiel, special weapons except ammunition, highly technical in nature, narcotics, etc.).

3.15.2.8. Special Control Item Code. A single character alphabetic or numeric code which identifies special controls applicable to the item to which it is assigned. The codes are listed in AR 708-1.

3.15.3. General

The guidance outlined herein in conjunction with other referenced data in appendix will be utilized for receipt, storage, and shipment of classified, pilferable, and sensitive materiel.

3.15.4. Policy

Security measures governing protection of classified, pilferable, and sensitive items in storage will be installed and enforced at Army Installations.

3.15.5. Responsibilities

3.15.5.1. Commanders will administer adequate physical security measures for protection of classified, pilferable, and sensitive items.

3.15.5.2. Commanders of Army installations will insure that all persons involved in the recipt, storage, issue, repair and inspection of classified materiel are trained to comply with the instructions contained herein and with regulations governing the security of classified materiel (see appendix).

3.15.5.3. The installation TOP SECRET Control Officer, or his alternate, will insure the security control of TOP SECRET materiel during receipt, storage, and issue.

3.15.6. Classified Material

3.15.6.1. Procedure.

3.15.6.1.1. Restricted storage area(s), conforming to the requirements of AR 380-20, will be established within the general storage area(s) as required. This area will be designated and prominently posted to indicate that it is "restricted." A register will be maintained and personnel will sign the register upon entering and leaving the area.

3.15.6.1.2. The chief of the storage activity will compile lists of all sensitive positions required for accomplishing functions directly concerned with receipt, storage, issue, inspection, or repair of classified materiel. A Critical Sensitive Position list will be compiled for all positions in which the incumbent will have access to TOP SECRET materiel. A Noncritical Sensitive Position list will be compiled for all positions in which the incumbent will have access to SECRET or CONFIDENTIAL materiel. These lists will indicate by name the individual occupying each position. A copy of the lists will be furnished the installation Security Officer and each activity's Restricted Area Custodian.

3.15.6.1.3. The chief of the storage operation will appoint a classified materiel custodian and at least one alternate custodian. Exception to this rule exists in the case of TOP SECRET materiel as noted in 3.15.5.3. above.

3.15.6.1.4. It will be the responsibility of the custodian or alternate custodian to limit entry to restricted areas to only those personnel with proper security clearance and duty requirement.

3.15.6.1.5. Custodian(s) will be responsible for locks and seals on restricted areas to assure that the materiel is not compromised in any manner.

3.15.6.1.6. When circumstances warrant, an armed guard will be supplied by the installation security force to safeguard materiel during receipt, repair, preservation-packaging or packing processing, transfer, processing for shipment, or allied functions.

3.15.6.1.7. In cases where classified shipments are received with violations of security requirements, the installation Intelligence Officer will be notified immediately. The shipment in question should not be left unattended until properly documented and securely stored.

3.15.6.1.8. All duties involving handling or access to unpacked or unpackaged classified materiel, and the applicable classified documents or correspondence pertaining thereto, will be accomplished only by properly cleared individuals.

3.15.6.1.9. Appropriate security identification will be furnished to and displayed by all personnel authorized to work in restricted areas containing classified supplies.

3.15.6.1.10. The installation Security Officer may approve special one time passes for visitors to enter restricted areas containing classified materiel, provided such individuals have a proper security clearance and a valid need for access to the area. Personnel in these cases must be under the constant surveillance of the custodian or properly cleared supervisor and be required to sign the register on entering and leaving the area.

3.15.6.1.11. Where changes are made in responsibility for classified materiel, caused by materiel transfers between depots, from contractor to depot, from depot to contractor, or intra-depot movement, such materiel will be receipted for by the consignee or his custodian representative as prescribed by AR 380-5.

3.15.6.1.12. Shipment documentation and related correspondence will be handled as prescribed by AR 380-5 and AR 725-50. Classified materiel and/or related documents will be hand carried or escorted by appropriately cleared and authorized personnel during intra-depot movment.

3.15.6.2. Inspection. All inspection, identification, repair, testing, packing, marking, checking, and associated physical operations required in connection with classified materiel will be performed within the restricted storage area whenever possible. When quantity or complexity of processing precludes this, temporary restricted areas will be established as required.

3.15.6.3. Marking and Packing. Standard marking procedures with the exceptions as listed in MIL STD 129, DOD 4500.32-R; and DOD 5200.1-R will apply for classified materiel. Reference MIL STD 129 for procedure for inclusion of packing lists.

3.15.6.4. Shipment.

3.15.6.4.1. Materiel will be delivered to carrier and loaded under the supervision of Classified Materiel Custodian or his alternate. Custodian will insure that proper locks and seals are applied to carrier's equipment.

3.15.6.4.2. Installation freight traffic office will determine method of shipment in accordance with AR 55 16.

3.15.6.4.3. The Armed Forces Courier Service (ARFCOS) may be employed for the transmission of materiel classified TOP SECRET (AR 380-5, AR 380-55).

3.15.6.4.4. SECRET materiel will be shipped according to size and criteria established in AR 380-55, AR 55-16, and AR 55-355.

3.15.6.4.5. Carload or truck load shipments will be made by rail car or truck under armed escort.

3.15.6.4.6. Less than carload or truckload lots by

a. Freight carriers that provide signature security service.

b. Rail car or truck (exclusive use of vehicle) under armed escort.

c. **Air Express Armed Surveillance.**

3.15.6.4.7. Small quantities of secret materiel may be personally transported by an officer or warrant officer courier, or a responsible civilian. Use of private vehicles is authorized, but materiel *must be under surveillance of the custodian at all times.*

3.15.6.4.8. CONFIDENTIAL materiel will be shipped in accordance with criteria authorized in AR 380-55, AR 55-16, and AR 55-355.

3.15.6.5. Escorts. Classified materiel will be safeguarded at all times during movement. This may be accomplished by the use of authorized military or civilian escorts or guards.

3.15.6.6. Disposal or Destruction. Materiel with a security classification will be destroyed or otherwise disposed of only upon receipt of specific written instructions from the accountable supply distribution activity (ASDA) concerned.

3.15.6.7. Inventory.

3.15.6.7.1. TOP SECRET and SECRET materiel will be completely inventoried at least once annually and more frequently if deemed necessary.

3.15.6.7.2. Discrepancies in inventory counts will be researched immediately upon completion of physical count. Deficiencies and discrepancies will be referred to the Installation Security Officer for investigation and corrective action.

3.15.7. Pilferable and Sensitive Items

3.15.7.1.1. Security

3.15.7.1.1. Commanders will insure that all pilferable and sensitive items are afforded the degree of physical security required to adequately safeguard such materiel from unauthorized access, sabotage, damage and theft. Protective measures will be enforced according to the nature of the items involved and will be equally applicable in storage and processing areas. Security areas will be properly designated and approved by the installation's security officer. The degree of security enforced will be the basis for determining required locking controls for buildings, fenced in storage areas within buildings, or both.

3.15.7.1.2. Entrance to security areas will be limited to specific individuals properly authorized such access to storage, or processing areas. Sign-in and sign-out registers will be maintained in all security areas. All security areas will be posted as restricted areas.

3.15.7.1.3. Keys controlling security areas will be limited to a minimum number of authorized individuals to maintain operations and will be strictly controlled by responsible officials and the installation security officer.

3.15.7.2. Storage

3.15.7.2.1. Pilferable and sensitive items will not ordinarily be stored in the same area with classified materiel. However, when circumstances require the storage of pilferable/sensitive and classified items in the same security area, the entire storage area will be controlled equivalent to the highest security classification of any item stored therein. When this situation occurs, it will only be approved as a temporary condition. Immediate action will be taken to provide classified items the storage security designated in paragraph 3.15.6.1.1.

3.15.7.2.2. Pilferable items ordinarily will not be stored in warehouses where security protection is lacking. Circumstances, however, may result in pilferable items requiring general purpose storage environment, i.e., items in large banded containers for which secure storage space is temporarily not available. When this situation occurs, general purpose storage environment is permitted, however, when such containers are opened for partial issues, the residual quantities will be transferred to a specified secured area.

3.15.7.2.3. Sensitive items will only be stored in designated security areas and will be afforded proper physical security controls at all times.

3.15.7.2.4. Sensitive items designated as *small arms* will not be collocated with other pilferable materiel. Small arms must be afforded separate storage, handling and security controls as set forth in section XII of this chapter. These instructions do not prohibit the storage of small arms in the same warehouse with other sensitive or pilferable items, but require that small arms be separated from other items by additional partitioning, fencing, or locked areas.

3.15.7.2.5. Specific individuals and alternates will be assigned, at the storage activity, to review security and handling needs of items with pilferable/sensitive codes. These individuals will also review other items in storage which may present security or special handling problems.

3.15.7.2.6. Receipts. In addition to receiving procedures described in section 1 of this chapter, the following instructions are applicable.

3.15.7.2.6.1. Receipts of pilferable and sensitive items will be provided required physical security controls from the time of unloading, during processing and in-transit to storage. To preclude risks, receipts of pilferable and sensitive items should be unloaded and checked-in at the storage site, if practicable. Receipt inspection procedures will include determination of any evidence of tampering.

3.15.7.2.6.2. Intra-depot movements of pilferable and sensitive items will be accompanied by an authorized individual when necessary, or transported in a locked conveyance.

3.15.7.3.3. Where pilferable or sensitive items moves to a storage area over a mechanical handling system, such as a power and free conveyor or a tow-line conveyor system, special locked (padlocked) containers will be used. This also applies to materiel moving from storage to the shipping area.

3.15.7.2.7. Shipments. Pilferable and sensitive items will be shipped in accordance with AR 725-50 and Section II of this manual.

APPENDIX

REFERENCES

AR 55-16	Movement of Cargo by Air and Surface—Including Less Than Release Units and Parcel Post Shipments
AR 55-355	Military Traffic Management Regulation
AR 66-6	Armed Forces Courier Service Charter
AR 190-13	Physical Security
AR 310-25	Dictionary of United States Army Terms (Short Title: AD)
AR 380-5	Department of the Army Information Security Program
AR 380-20	Restricted Areas
AR 380-55	Safeguarding Classified Defense Information in Movement of Persons and Things
AR 690-1	Civilian Applicant and Employee Security Program
AR 708-1	Cataloging and Supply Management Data
AR 725-50	Requisitioning, Receipt, and Issue System
AR 735-11	Accounting for Lost, Damaged, and Destroyed Property
AR 740-26	Physical Inventory Control
FM 19-30	Physical Security
MIL-STD-129	Marking for Shipment and Storage
DODR 4500.32-R	Military Standard Transportation and Movement Procedures (MILSTAMP)
DOD 4160.21.1-M	Defense Demilitarization Manual
DOD 5200.1-R	DOD Information Security Program Regulation (DODI-SPR)

CHAPTER 3
STORAGE PROCEDURES
Section XVI. HANDLING OF RETROGRADE MATERIEL

	Paragraph	Page
General	3.16.1	316-1
Purpose and scope	3.16.2	316-1
Definition	3.16.3	316-1
Preparation of materiel for retrograde movement	3.16.4	316-1
Depot handling of retrograde materiel	3.16.5	316-7

3.16.1. General

Under optimum conditions excess materiel being returned to the supply system moves from user to the return destination within the framework of well-defined and published directives. Return of retrograde materiel generated as a result of major changes in troop commitments such as a cessation of hostilities is a different matter. Under these latter conditions, cleaning, identification, classification, preservation, packaging, and packing of retrograde material is frequently accomplished under conditions of demanding deadlines for movement of cargo, widely fluctuating personnel strengths and a lack of technical skills and adequate facilities. Despite these difficulties, the dollar value and criticality of these serviceable or economically reparable assets are such that every effort must be made to recoup this material and provide for its expeditious entry in accountable records.

3.16.2. Purpose and Scope

This section provides instructions to be used during the processing and handling of retrograde materiel. Specific procedures for use in oversea theaters are contained in the 750-series of technical manuals. They are for use only as approved by the oversea commander. The procedures of this section will be used in oversea theaters when more specific instructions, authorized for use, are not available or cannot be applied. CONUS depots will be governed by the instructions contained herein when receiving, processing, and storing retrograde materiel.

3.16.3. Definition

Retrograde materiel consists of military supplies of all types, regardless of ownership, returning to depot storage sites from oversea installations or activities. Materiel returned as part of special programs such as "closed loop" or items returned for retrofit, testing, or similar actions are exceptions to these provisions and are not considered retrograde materiel within the scope of this manual. However, the procedures defined herein pertinent to cleaning, packaging, packing, marking, and decontaimination are equally applicable to this excepted materiel.

3.16.4. Preparation of Materiel for Retrograde Movement

3.16.4.1. Requirements for Protection. The shipper will adequately protect retrograde materiel. Specific preservation, packaging, packing, and marking requirements for shipment will be followed.

3.16.4.2. Regulatory Guidance.

3.16.4.2.1. Preparation of many categories of retrograde materiel is covered by the 750-series of technical manuals. These manuals share, in part, a common title, Procedures for Rapid Deployment, Redeployment, and Retrograde of, and usually concern a group of related items. For example, TM 750-201 covers Selected Support Items for Electronic Equipment. This title indicates that the contents of the manual are applicable to families of equipment. The individual items are listed by nomenclature and FSN.

Note. These manuals are not to be used in the oversea theater unless authorized by the commander.

3.16.4.2.2. Manuals of the TM 750-series contain extensive lists of preservation and packaging materials required to accomplish preservation and packaging of retrograde items. These manuals also contain certain instructions regarding preparation for quarantine inspection.

3.16.4.2.3. The following general instructions will be followed and if in conflict with the TM 750-series of manuals, will have precedence.

3.16.4.2.3.1. Equipment or containers will be free of soil when loaded on ships or aircraft.

3.16.4.2.3.2. Containers, including CONEX transporters, seavans, and MILVANS will be cleared of grain, food stuff, or soil before being returned, whether loaded with retrograde cargo or returned empty.

3.16.4.2.3.3. Wood containers and packing material will be inspected for termites, wood borer, or other insect infestation before being packed in larger containers or loaded on ship or aircraft. Under no circumstances will known infested wood or packing material be used. Containers and packing material will be inspected immediately prior to use to assure the absence of rodents, snakes, snails, or other animals or insects. All packing supplies should be stored in a manner to prevent infestation by insects or rodents.

3.16.4.2.3.4. Only authorized packing material will be used. In no instance will native grasses or fibers be used.

3.16.4.2.3.5. Containers more than 10 cubic feet capacity, to be shipped, will be treated as follows:

3.16.4.2.3.5.1. For closed containers, insecticide, dichlorvas strip, 2-inch (FSN 6840-142-9438) will be attached to the interior of each container, at the equivalent rate of 5 linear inches of strip per 8 linear feet length of container. Equal or lesser amounts should be used for smaller containers. Strips should be attached to the ceiling of containers and to areas offering the greatest amount of open space. Dichlorvas strip operates by release of vapor and is the pesticide of choice for treatment of closed containers.

3.16.4.2.3.5.1.1. Rodenticide, bait block diphacinona-paraffin, 8-ounce (FSN 6940-089-4664) will also be used. One block will be placed near the center of each CONEX size or applicable smaller container. The end of the red tape attached to the block will be led to the outside of the container in such a manner as to be clearly visible when the container is closed.

3.16.4.2.3.5.1.2. In large containers, including vans, one block will be used for each 5 linear feet evenly spaced throughout the length of the container. In these cases the block nearest the opening will have its red tape led to the outside.

3.16.4.2.3.5.1.3. In empty containers (small or large) only one block will be used. The red tape will be led to the outside in the usual manner.

3.16.4.2.3.5.1.4. Empty containers which have been cleaned and sealed by the van line agent or operator and are free from holes through which rodents could gain entry, and have tight fitting doors, do not require the use of bait blocks.

3.16.4.2.3.5.2. In open containers diazinon dust, 2 percent (FSN 6840-753-5038) will be applied to the interior of each container at the rate of 4 pounds per 1,000 square feet of surface area. Application directed toward the walls and upper corners will help reduce the possibility of quarantinable pest insects being transported. Dust can be applied with a manually operated duster with rotary fan (FSN 3740-132-5935) or a manually operated duster of the tubular pump type (FSN 3740-132-5936). The latter is preferred for small open containers.

3.16.4.2.3.5.2.1. Diazinon dust may be harmful to certain types of electronic equipment. Items of this nature should not be treated with diazinon dust. To the greatest practicable extent these items should be shipped in closed containers that are treated with dichlorvas strip.

3.16.4.2.3.5.3. In the event these instructions are at variance with command regulations regarding preparation of retrograde cargo for shipment, or technical assistance and advice regarding these instructions are required, the command entomologist should be consulted.

3.16.4.2.3.5.4. PERSONNEL INVOLVED IN APPLYING DUST, STRIP INSECTICIDE, OR BAIT BLOCKS WILL WEAR GLOVES, PROTECTIVE CLOTHING, AND RESPIRATORS AS RECOMMENDED BY THE POST SURGEON OR SAFETY OFFICER. MEDICAL SURVEILLANCE OF PERSONNEL INVOLVED IN PESTICIDE HANDLING IS IMPERATIVE.

3.16.4.2.4. TM 38-230-1, Preservation, Packaging, and Packing of Military Supplies and Equipment, Preservation and Packaging, and TM 38-230-2, Preservation, Packaging, and Packing of

Military Supplies and Equipment, Packing, and chapter 3, sections II and VIII of this manual provide and explain the fundamental principles and approved methods to be utilized in the protection of military supplies and equipment against deterioration and damage during shipment. They should be consulted in the absence of specific instructions applicable to each item, or in the absence of capability or facility to comply with item protection specifics.

3.16.4.2.5. TM 38-250 provides and alphabetical listing of dangerous materials. It prescribes markings for identification and necessary precautionary measures to be taken in preparation for air shipment.

3.16.4.2.6. Retrograde ammunition presents a special hazard and will always be packaged and packed level A as indicated in TM's or drawings.

3.16.4.2.7. Classified and sensitive items will be processed and handled according to requirements of paragraph 2.2.3.4.3, TM 743-200, and chapter 3, section XII, of this manual.

3.16.4.2.8. AR 55-355, provides for several types of protective service to shippers of military property. These services include escorted shipments where required by nature of the commodity. Another service available is the Protective Signature Service.

3.16.4.2.8.1. Protective Signature Service provides protecttion to transported commodities by person-to-person tally and signature, from the time of acceptance from shipper at point of origin to the time of delivery to consignee at destination.

3.16.4.2.8.2. Chapter 216 of AR 55-355 also defines requirements of the shipper in the forwarding of explosives and other dangerous articles by all modes of transportation (see 3.16.4.2.-0 below).

3.16.4.2.9. AR 700-15 provides guidance in the selection of appropriate levels of protection as related to mode of transportation and eventual type of storage to be afforded materiel at its destination.

3.16.4.2.10. AR 746-1 provides certain policies for the preparation of returned materiel from oversea commands. It also provides that:

3.16.4.2.10.1. Materiel such as vehicles, weapons, salvaged empty projectiles, cartridges, cartridge cases, and other such supplies and equipment likely to have been explosive loaded or contaminated (i.e., metal parts from bombs, boobytraps, mines, and other ammunition) will be carefully inspected by the shipper prior to shipment from oversea commands.

3.16.4.2.10.2. DA Form 9-16 (a Materiel Inspection Tag) will be affixed to each vehicle, weapon (except small arms) or other applicable piece of equipment, indicating that all explosives have been removed prior to shipment for oversea commands.

3.16.4.2.10.3. Small arms shipping containers will be tagged to indicate that contents have been inspected.

3.16.4.2.11. Shipments of ammunition and other materiel of an explosive, toxic or flammable nature will be governed by specific instructions as contained in AR 55-55, AR 55-228, AR 55-355, TM 35-250 and Department of Transportation (DOT) regulations.

3.16.4.2.12. SB 9-156 provides a comprehensive list of specifications and allied publications that cover the detailed aspects of preservation and packaging.

3.16.4.2.13. SB 38-100 contains FSN, item description, applicable specifications, unit of issue, unit quantity, and remarks as to the purpose or use of the listed materials.

3.16.4.2.14. MIL-STD-129 provides the requirements for the uniform marking of military supplies and equipment. Proper markings as indicated in MIL-STD-129 and as modified herein will be applied to all interior packages and to all exterior shipping containers as indicated in the following:

3.16.4.2.14.1. Prior to application of new markings to a container, old markings that are incorrect or not required will be obliterated (Use obliterating lacquer (FSN 8010-161-7392) or enamel (FSN 8010-291-0889).

3.16.4.2.14.2. The minimum identification markings that will be applied are FSN, nomenclature, quantity and unit of issue (fig 1). These may be applied by stencil, label, or tag.

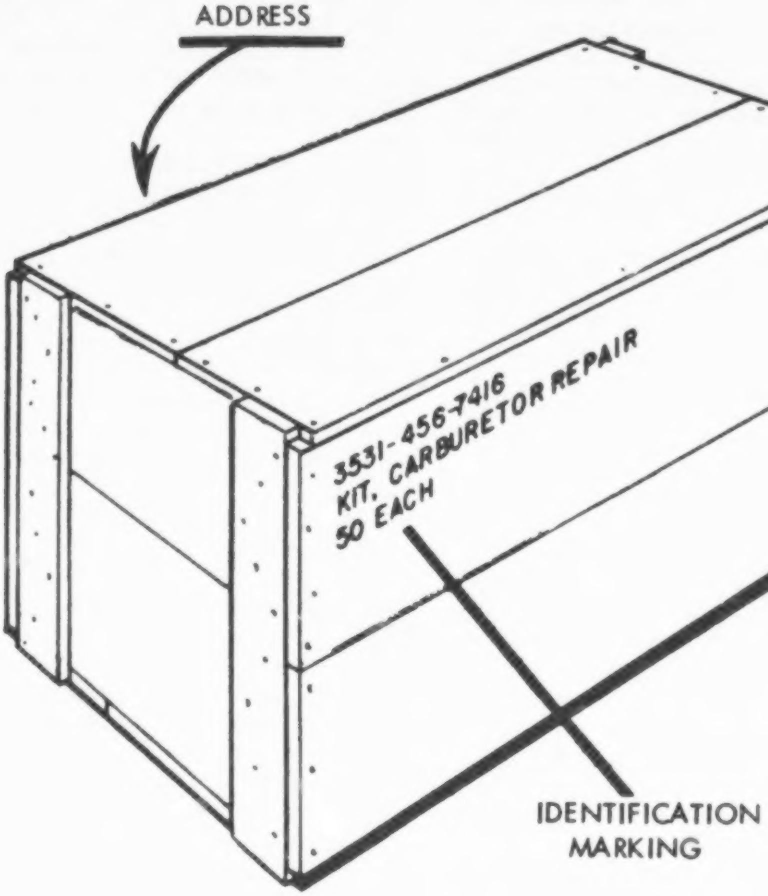

ADDRESS
3531-456-7416
KIT, CARBURETOR REPAIR
50 EACH
IDENTIFICATION
MARKING

Figure 1.

3.16.4.2.14.3. Stencil markings will be applied with black ink (FSN 7510-191-6030 for non porous surfaces or FSN 7510-161-0811 for porous surfaces).

3.16.4.2.14.4. Unpacked items (e.g., rods, coils, reels, etc.) will be marked by stenciling, labeling or tagging the area most suitable (fig. 2).

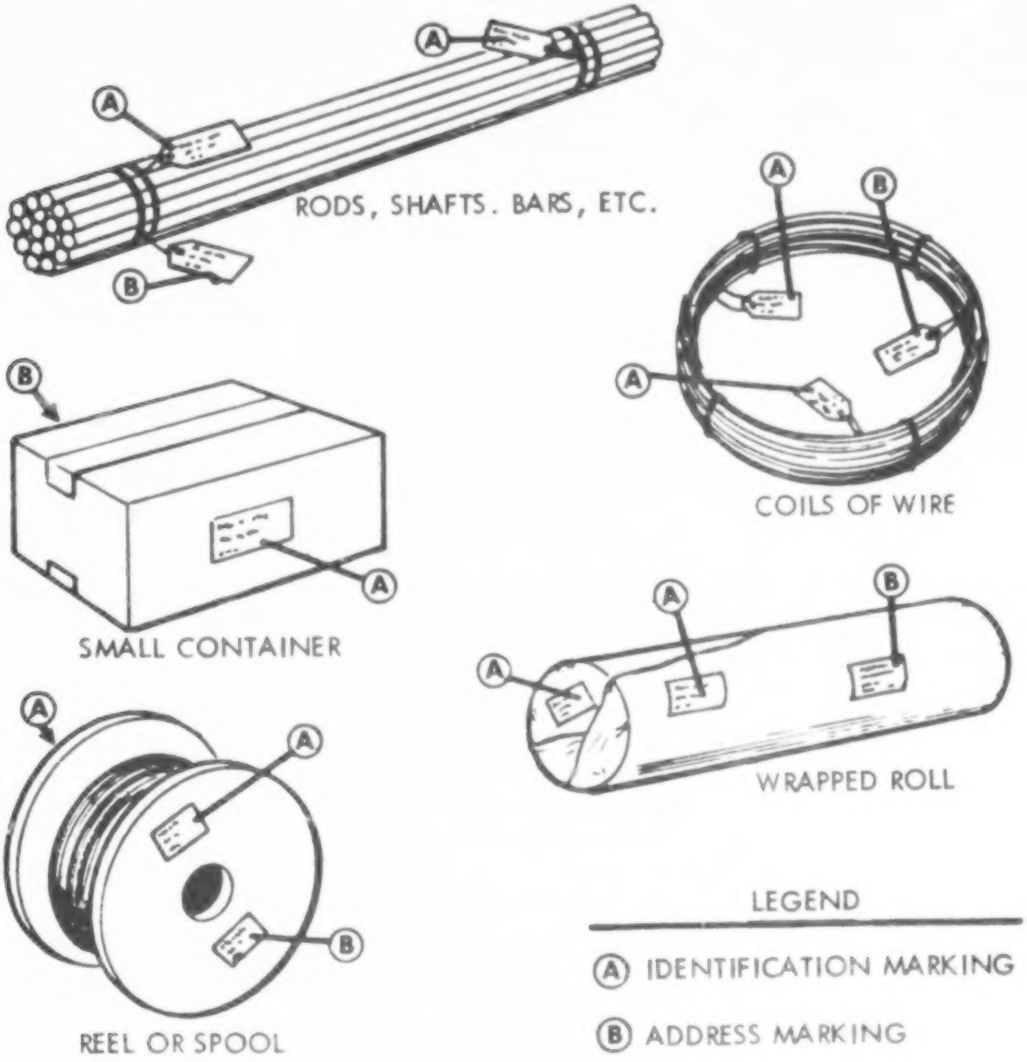

Ⓐ
Ⓐ
Ⓑ
RODS, SHAFTS. BARS, ETC.
Ⓐ
Ⓑ
Ⓐ
COILS OF WIRE
Ⓑ
Ⓐ
SMALL CONTAINER
Ⓐ
Ⓑ
Ⓐ
Ⓐ
WRAPPED ROLL
Ⓐ
Ⓐ
Ⓑ
REEL OR SPOOL
LEGEND
Ⓐ IDENTIFICATION MARKING
Ⓑ ADDRESS MARKING

Figure 2.

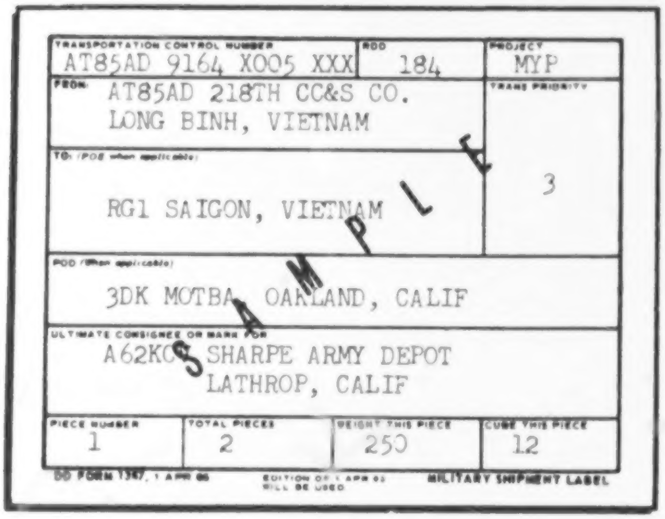
3.16.4.2.14.5. On palletized loads, each container will be marked with identification marking, quantity, and unit of issue. Address markings will be applied by the use of marking boards, attached to one side and to one end.

3.16.4.2.14.6. Unsheathed crates will have identification and address markings applied by stenciling directly onto a frame member or by use of marking boards.

3.16.4.2.14.7. Vehicles normally have identification plates attached to them. When no identification plate is attached, markings should be stenciled on the vehicle with gasoline-soluble paint, white, FSN 8010-597-8238.

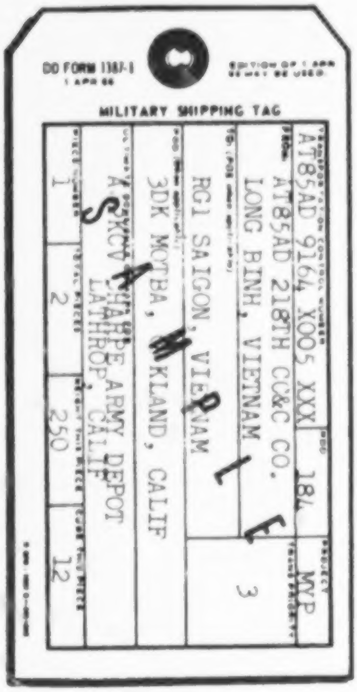
3.14.4.2.14.8. Groups of items consolidated by FSN by bagging, bundling, tying, cartonizing, and properly may be placed in a single shipping container if they are all going to the same destination. Each group of a single FSN will have three copic of DD Form 1348-1 (DOD Single Line Item Re lease/Receipt Document) attached. Place one copy of the DD Form 1348-1 in a packing list envelope (FSN 8105-290-4365) on the outside of the container.

3.16.4.2.14.9. Contents identification markings will not be placed on the exterior of CONEX transporters, RO/RO trailers, seavans or MILVANS. However, each container therein must have proper identification markings applied. Address marking will be accomplished by application of DD Form 1387-1 (Military Shipping Tag) for seavans and MILVANS, and by application of a stencil or DD Form 1387 (Military Shipment Label) for CONEX transporters or RO/RO trailers (fig 3).



TRANSPORTATION CONTROL NUMBER AT85AD 9164 X005 XXX
RDD 184
PROJECT MYP
FROM: AT85AD 218TH CC&S CO.
LONG BINH, VIETNAM
TRANS PRIORITY 3
TO: (POE when applicable) RG1 SAIGON, VIETNAM
POD (When applicable) 3DK MOTBA, OAKLAND, CALIF
ULTIMATE CONSIGNEE OR MARK FOR A62KCV SHARPE ARMY DEPOT
LATHROP, CALIF
PIECE NUMBER 1
TOTAL PIECES 2
WEIGHT THIS PIECE 250
CUBE THIS PIECE 12
DD FORM 1387, 1 APR 66
EDITION OF 1 APR 65 WILL BE USED
MILITARY SHIPMENT LABEL

SAMPLE



DD FORM 1387-1
1 APR 66
EDITION OF 1 APR 65 MAY BE USED
MILITARY SHIPPING TAG
TRANSPORTATION CONTROL NUMBER AT85AD 9164 X005 XXX
RDD 184
PROJECT MYP
FROM: AT85AD 218TH CC&C CO.
LONG BINH, VIETNAM
TRANS PRIORITY 3
TO: (POE when applicable) RG1 SAIGON, VIETNAM
POD (When applicable) 3DK MOTBA, OAKLAND, CALIF
ULTIMATE CONSIGNEE OR MARK FOR A 62KCV SHARPE ARMY DEPOT
LATHROP, CALIF
PIECE NUMBER 1
TOTAL PIECES 2
WEIGHT THIS PIECE 250
CUBE THIS PIECE 12

SAMPLE

Figure 3.

3.16.4.2.14.10. The special handling and precautionary marking requirements shown in MIL-STD-129 for identifying dangerous, sensitive, or security materiel are also applicable to the shipment of retrograde cargo.

3.16.4.3. Minimum Acceptable Preparation.

3.16.4.3.1. Washing, cleaning, and decontamination of materiel.

3.16.4.3.2. Application of a suitable preservative to item surfaces susceptible to rust, corrosion, or other deterioration.

3.16.4.3.3. Adequate blocking, bracing and cushioning of items to prevent movement within shipping containers.

3.16.4.4. Proper Use of Containers.

3.16.4.4.1. Containers designed as reusable containers (AR 725-1) should be used only for the same type item for which they were originally designed.

3.16.4.4.2. Containers are designed with a weight limitation. Overloading results in container failure and item loss or damage.

3.16.4.4.3. Force fitting items into containers results in damage to the item and container.

3.16.4.4.4 Discrimination in placement and mix of items within a container must be practiced. Indiscrimiante loading without properly immobilizing the items can reduce serviceable material to scrap.

3.16.5. Depot Handling of Retrograde Materiel

3.16.5.1. General.

3.16.5.1.1. Regulatory guidance. The processing of retrograde materiel in terms of documentation and records, storage and routine depot handling is covered in AR 725-50, AR 755-1, TM 743-200 and other portions of this manual. Special instructions and instrutions valid only during a certain time frame or to cover a specific situation may be disseminated via TWX, supply letter or circular.

3.16.5.1.1.1. A command Health Report (RCS Med-3 (R-5)) is required by the Post Surgeon in accordance with AR 40-5. This regulation prescribes that this monthly report will include information regarding unusual prevalence of insects and rodents and effectiveness of the control system employed. This includes the retrograde materiel function.

3.16.5.1.1.2. AR 40-579 lists regional Public Health Directors who may be contacted by individual CONUS depots, as required.

3.16.5.1.1.3. AR 385-32 establishes policy and procedure for providing protective clothing and equipment. It cites in part, conditions that warrant or call for the use of protective clothing.

3.16.5.1.1.4. AR 420-76 defines the entomological control program as it is to be conducted at installations and stations under control of the Department of the Army.

3.16.5.1.1.6. TM 3-220 is directed toward combat or field operations. However, it does provide a significant point for consideration. It states that at the present time there are no standard field or automatic biological agent detection devices; hence, rapid determination of biological contamination cannot be made. It likewise states that identification is not a prerequisite to the conduct of decontamination action. The TM identifies decontaminants and outlines safety precautions for each type decontaminant.

3.16.5.1.1.7. Information pertinent to procedures for control of pests, insects and rodents are set forth in TM 5-632. Fumigation equipment can be obtained under FSN 3740-565-6076. This kit is explained and illustrated in chapter 4 of the TM.

3.16.5.1.1.8. TM 743-200, chapter 3, section IV, contains additional data on control measures for rodents and insects and on the reclamation and disposal of infested stocks. A part of this section is concerned with training and safety measures for the pest control program.

3.16.5.1.1.9. The Care, Handling, Preservation and Destruction of Ammunition is covered in TM 9-1300-206. The contents include general safety precautions, storage techniques and inspection procedures.

3.16.5.1.1.10. Technical manuals of the 750-series contain some information of limited interest to receiving depots for certain decontamination actions. These TM's cover a specific item or family of items.

3.16.5.1.1.11. TB MED 223 specific guidance in the selection of these devices and a listing of approved respirators as prepared by the U.S. Bureau of Mines. Description of resporatory type, functional characteristics, and limitations of each type are included.

3.16.5.1.1.12. TB ENG 406 prescribes actions pertaining to inspection and cleaning of retrograde materiel, treatment and disposal of contaminated soil, and precautions required when using recommended soil decontaminatnts.

3.16.5.1.2. Planning. Prior to and during the time of a major materiel roll-up from oversea areas, depots receiving retrograde materiel must anticipate and plan for:

3.16.5.1.2.1. Receipts with missing or incomplete documentation or markings.

3.16.5.1.2.2. A large increase in truck, LTL, carload, LCL, and air cargo receipts. The pace with which retrograde materiel is evacuated from oversea facilities, the turn around of significant quantities of cargo enroute at the time roll-up action is initiated, and the necessity to keep receiving ports clear, can cause receipts to arrive in multiple carload or truckload quantities on very short notice or with no notice at all.

3.16.5.1.2.3. Decisions requiring on the part of storage managers, often after only curstory examination, as to acceptable materials handing, segregation and storage techniques. For example, materiel contained in carload(s) or truckload(s) quantity can require decision at time of receipt as to:

3.16.5.1.2.3.1. Proper segregation of materiel awaiting subsequent identification and inspection, delivery to maintenance facility, direct delivery to issue stock locations, or disposal activity and for adequate security protection.

3.16.5.1.2.3.2. Additional segregation, required for materiel suspected of contamination or infestation.

3.16.5 1.2.3.3. Type of storage protection to be afforded.

3.16.5.1.2.3.4. Priority of unloading with due consideration to other workload, resource availability, and demurrage interests.

3.16.5.1.2.3.5. Immediate and adequate temporary protection of materiel offloaded in open storage.

3.16.5.1.2.3.6. Realignment of personnel and equipment to meet a large retrograde receiving workload.

3.16.5.1.2.4. Maintenance of adequate covering on a large volume of materiel in open storage.

3.16.5.1.2.5. The identification, inspection, and classification of materiel in volume quantities to include:

3.16.5.1.2.5.1. The availability of space, personnel and equipment for initial segregation of materiai by type (electronic items, handtools, repair parts, etc.).

3.16.5.1.2.5.2. Large scale production line inspection, classification, processing and packing operations.

3.16.5.1.2.5.3. Continuous training in item inspection criteria. A thorough training program is a prerequisite for successful accomplishment of a rertrograde material program.

3.16.5.1.2.5.4. Development of item inspection and classification standards and maintenance of daily in-house production and backlog figures.

3.16.5.1.2.6. Identification, inspection, classification, and disposition of line items other than those normally issued from or stored by Army depots, e.g., clothing, individual equipment, furniture, and housekeeping items.

3.16.5.1.2.7. The need for facilities and services for identification of contamination and infestation by type and the subsequent treatment for elimination of these conditions.

3.16.5.2. Special Considerations. The receipt of retrograde vehicles and powered equipment presents special problems to the receiving installation. Care must be exercised to detect any safety hazard resulting from a failure by the shipper to properly drain and purge fuel systems and remove or at least disconnect batteries. Vehicles and equipment destined for storage in excess of 90 days will have the fuel system prepared for storage in accordance with applicable specifications. In all cases, batteries will be disconnected and removed.

3.16.5.2.1. Depots receiving retrograde materiel must be aware of the possibility that shipments may not have been properly cleared of ammunition or other hazardous items. While this situation is most likely to occur at depots handling combat and general purpose vehicles, the fact remains that many types of retrograde materiel present a potential hazard of this nature. Every depot must be prepared for such an incident. Depot procedures should include instructions for the preparation of DD Form 6 (3.16.5.1.1.5. above) and action steps based on the guidance contained in AR 75-15. As a minimum, depot procedures should include source of technical assistance for disposal action, evacution plans, and designation of responsible officials to be notified when this situation arises.

3.16.5.2.2. Where volume retrograde receipts under roll-up conditions are faced, frequent (in some cases daily or even more often) demands for wholesale adjustments in the labor force and materials handling fleet units may be necessary. These circumstances will make it mandatory that a program of complete flexibility of personnel and equipment be instituted. The provisions for operation under this concept are provided in chapter 4, section VII, of this manual.

3.16.5.2.3. The cost for transporting and handling uneconomically reparable and salvage materiel is the same as for serviceable or economically reparable items. Those CONUS activities receiving retrograde materiel that is subsequently transshipped for any reason will exert particular effort to assure that obvious uneconomically reparable and salvage materiel is not forwarded to the next destination unless otherwise directed.

3.16.5.2.4. Treated or cleaned cargo will be identified with a ntation or stamp on the Transportation Control Movement Document (TCMD) for the guidance of subsequent receivers.

3.16.5.3. Inspection and Documentation. Inspection to detect soil, insects, snails, rodents, and other pests, and infested and unauthorized agricultural products is a key phase of retrograde materiel handling. It is intended that ports and depots involved in the initial receipt of retrograde materiel will make every effort to apply proper and effective decontamination treatment before transshipment. Demands created by limited storage space, conformity to deadline requirements, and other pressures demanding the accelerated movement of materiel can result from time to time in the shipment of potentially contaminated materiel. Unless positive information exists to the contrary, this situation demands that every depot receiving retrograde materiel, even that materiel transshipped from a CONUS installation, must assure that receipts are free of contamination.

3.16.5.3.1. As an optimum preference, materiel that shows evidence of contamination will be segregated and placed in an isolated area. This materiel should remain isolated awaiting inspection to determine the decontamination procedures to be applied. Materiel that has not been treated but is clean and gives no evidence of contamination can be moved directly into the appropriate area for the accomplishment of classification and identification.

3.16.5.3.2. The fact that materiel has been treated in accordance with the appropriate TM 750-manual may or may not be indicated by markings on the container. Where rodenticide blocks have been used, a red tape should be extending from the container opening, e.g., a CONEX transporter or sea-van. These blocks may also be attached to equipment and vehicles. Materiel that can be recognized as having been so treated should be segregated from untreated materiel and scheduled through a process to remove the rodenticide residue before it is subject to the classification/identification procedures.

3.16.5.3.3. Disposal of contaminated materiel will be such as to prevent contamination of streams, lakes, ponds, or other surface or ground water sources (3.16.5.3.19 below).

3.16.5.3.4. Contamination or infestation of retrograde cargo found on depot will be reported in the Command Health Repor, RCS MED-3 (R5), as prescribed in AR 40-5 (3.16.5.1.1.1. and 3.16.5.1.12. above).

3.16.5.3.5. Upon receipt of retrograde materiel, immediate visual inspection will be made for detection of ammunition or explosives. Personnel working in areas processing returned materiel will be warned of the possibility that ammunition and explosives may be contained in returned materiel and vehicles, and informed of the correct procedures to be used for the removal of such explosives.

3.16.5.3.6. Small arms ammunition up to 50 caliber only may be removed by operating personnel. Explosives such as mines, grenades, rockets, blasting caps, and propellants or ammunition larger than 50 caliber will be removed only by quaified specialists.

3.16.5.3.7. Ammunition other than small arms ammunition will not be removed or handled until determined safe by Explosive Ordnance Disposal personnel or a qualified inspection specialist.

3.16.5.3.8. Metal containers painted red, equipped with a lock and stenciled "Danger—Ammunition" will be used for deposit of ammunition of 50 caliber or less that is found by operating personnel. These containers will be available to all inspection, cleaning, classification, and disassembly personnel at any time small arms ammunition is likely to be encountered.

3.16.5.3.9. PERSONNEL INVOLVED IN REMOVING DUST OR STRIP INSECTICIDE AND BAIT BLOCKS WILL WEAR GLOVES, PROTECTIVE CLOTHING AND RESPIRATORS AS RECOMMENDED BY THE POST SURGEON OF SAFETY OFFICER.

3.16.5.3.10. All containers that have a red tape extending from the container opening have been treated with some form of decontaminate. Removal of this materiel is necessary before individual items are unpacked or equipment is processed.

3.16.5.3.11. A vacuum cleaner will be used to collect the decontaminant dust as the individual items or packages are removed from the containers. Dust or strip insecticides will also be removed from each package.

3.16.5.3.12. After contents have been removed and cleaned, the inner surfaces of the container should be vacuumed to remove all remaining dust.

3.16.5.3.13. All dust strip insecticides and bait blocks will be stored in separate closed containers for collection and proper disposal by the Post Engineer.

3.16.5.3.14. The Post Engineer or Surgeon should be notified immediately of living or dead insects, rodents, or other animals found during unpacking operations.

3.16.5.3.15. Action will be taken to treat all mud, dirt, water, trash, and other possible contaminants in/on returned materiel and vehicles to prevent the introduction and establishment of disease and pest organisms of foreign origin into CONUS (see TB ENG 406 and 3.16.5.3.19. below). The treatment should also be extended to water drained from cooling systems of retrograde vehicles.

3.16.5.3.16. Soil contaminated cargo will be washed with water under high pressure, or by the application of live steam. Cargo that does not readily lend itself to washing, or that may be damaged by water or heat should be cleaned mechanically. Vigorous brushing or beating should effectively remove such deposits. Cleaning should be done at the decontamination site. Soil contaminated cargo that cannot be cleaned by any of these methods will be fumigated or otherwise treated as recommended by qualified decontamination specialists.

3.16.5.3.17. Railway cars, aircraft, and other vehicles used to transport soil contaminated retrograde cargo will be inspected immediately after discharge. If soil is present, it will be carefully swept up, placed in containers and delivered to the soil decontamination facilities for disposal.

3.16.5.3.18. Soil decontamination facilities should be located near the cargo unloading areas to minimize spread of contamination in handling. These facilities should consist of:

3.16.5.3.18.1. A paved area graded so that washings can be funneled to a central accumulation point.

3.16.5.3.18.2. A sturdy rack that can be used to elevate vehicles or cargo so that soil can be easily removed from the undersides.

3.16.5.3.18.3. Safe, locked storage space for storing dangerous chemicals and other materials.

3.16.5.3.19. Contaminated soil and water will be collected in a pit dug adjacent to the decontamination facilities. Accumulations of materiel in the pit will be treated with 2½ gallons of the solution indicated in 3.16.5.3.20. below in 150 gallons of water per 100 square yards of surface area. When the accumulation of treated soil reaches a level of 3 feet below the surrounding ground, the pit will be filled with uncontaminated soil, and a new pit will be used. The above solution may be omitted if the accumulated water can be withdrawn from the pit and heated to 150°F. for 30 minutes. Soil remaining in the pit will be treated with the above solution. Untreated materiel will not be discharged directly into streams or other fresh water.

3.16.5.3.20. A soil fumigant approved approved for treatment of contaminated soil and water is water miscible sodium methyl dithiocarbamate. This product is one approved by the Armed Forces Pest Control Board and consists 32.7% water miscible sodium methyl dithiocarbamate.

Note. A supplier of this type product is the Stauffer Chemical Company, 299 Park Avenue, New York, NY. Trade name of the product sold by this company is VAPAM. This is not an indorsement of one product over any other manufacturer's product, but rather to advise what is available. There may be other suppliers of this type solution. This note is intended to acknowledge compliance with paragraph 9g, AR 310-1.

3.16.5.3.20.1. This solution may be corrosive to brass and bronze, but the corrosion generally is limited to discoloration or surface oxidation. Pitting or erosion of metal parts may be a problem; therefore, valves and fittings of dispersal equipment should be flushed with water after each use.

3.16.5.3.20.2. This product is harmful if inhaled or swallowed. It is also irritating to eyes, nose, throat and skin. Avoid breathing the product or its spray mist. In case of contact, contaminated clothing or shoes must be removed immediately and flushed with plenty of water. Rinse eyes with water for at least 15 minutes and get medical attention. Wash and dry clothing and shoes before reuse. When applying in inclosed or poorly ventilated areas, wear a mask or respirator of a type approved for general insecticide use as listed in the Agricultural Research Service, U.S. Department of Agriculture publication 33-76-2, February 1966, or TB MED 223. Keep product in locked storage. Keep container tightly closed when not in use. Do not store below 0°F.

3.16.5.4. Receipt and Storage. It is worthy of constant stress at operating echelons that the volume condition of roll-up retrograde must not be considered justification for a breakdown in storage and supply discipline. Orderly storing, recorded locations, proper segregation, adequate protection and reasonable records of backlog tonnage and line items must prevail.

3.16.5.4.1. Insofar as practicable, retrograde receipts will be taillied and accounted for in the fashion currently prescribed. A concerted effort must be made to record and account for retrograde materiel at time of receipt.

3.16.5.4.2. During periods of peak receiving workload, involving volume carload and truckload retrograde shipments, indiscriminate and haphazard unloading (dumping) of materiel from cars and trucks to clear the carriers can result in unnecessary expense in terms of follow-on time and personnel to properly store the materiel at a later date. In the interest of economy, the job must be done properly the first time. It follows that demurrage will not be a single overriding factor in determining how and when the carrier or conveyance will be unloaded.

3.16.5.4.3. Retrograde materiel should never be "piled" either on the ground or in covered storage. Every effort will be exerted to palletize and stack this materiel in orderly fashion, properly cover that portion stored in open areas and maintain accurate location records. Loose items will be collected and stored in box pallets, large containers or in any other suitable storage aid to permit orderly storage and segregation. The buildup of unrecorded backlogs of unknown tonnage and line items count precludes accurate work programming, budget forecasts and identificattion of required personnel strengths. "Piles" of unrecorded materiel in backlog also tend to reduce the impetus for action in processing this materiel. This in turn enhances the degree and spread of infestation, causes or increases deterioration or serviceable or economically reparable materiel and denies the supply system a significant amonut of assets.

3.16.5.4.4 A concept for depot receipts control is covered in paragraphs 3.1.2.2. and 3.1.2.5. of this manual. The practical use of such a system lies in the acceptance of the consignor's statement as to quantity and description of shipment content. This is recognized as conditional pending an acceptable identification, classification, and count action. None the less, it still provides a rational basis for an evaluation of backlog and for the projection of resource requirements.

3.16.5.4.5. As a general rule, unprocessed retrograde materiel will not be stored with or immediately adjacent to serviceable issue stock. This rule will apply in both covered and open storage. The purpose of this policy is to prevent the spread of any contaminants present in retrograde materiel, to noncontaminated stocks. Where nonavailability of space prevents this type of storage, adjacent stocks, walls and floor area should be sprayed or otherwise protected to minimize insect migration.

3.16.5.4.6. Flammable and acid materiel will be stored in accordance with chapter 5, section IV, of this manual. Items of a sensitive nature and those of high value will be handled in a manner to assure proper security protection. (para 3.12.2.1. of this manual).

3.16.5.4.7. Sites selected for open storage should be the best available, preferably graded, well drained and surfaced. In the event only natural terrain surface is available, select the most solid surface and best drained area. The most desirable natural surface should remain stable and free of soft or muddy areas under climatic conditions normal to that locale. The area must be free of excessive weeds or tall grass which might be a fire hazard. Such open storage areas should be pretreated with a solution as prescribed in paragraph 5b(2) of TB ENG 406 to prevent and limit potential infestation.

3.16.5.4.8. The division and layout of open storage areas and the method of storage for certain stocks to be stored therein are shown in chapters 2 and 5 of TM 743-200. Consideration should be given to the requirements for and availability of electric power.

3.16.5.4.9. For nonpalletized materiel, loose boxes, or crated materiel requiring storage in open areas, the following is applicable:

3.16.5.4.9.1. Assemble containers or items in rectangular units in sections up to 15 feet wide by 30 feet long. Position containers within the stack with due consideration for subsequent retrieval by materials handling equipment.

3.16.5.4.9.2. Leave a space at least 18 inches wide between each block stack of containers to permit access as required, and to facilitate handling and installation of necessary protective covers.

3.16.5.4.9.3. Place 1- or 2-inch dunnage between a sufficient number of tiers in stacks that are not palletized (excluding such items as drums) to bind the stack, and more important, to permit free passage of air through each stack. This placement of dunnage between layers of containers must not interfere with drainage.

3.16.5.4.10. The outdoor storage of ammunition in Army depots requires prior approval. There are also certain restraints which prohibit outside storage of pyrotechnics, high explosives, and solid propellants. Special considerations are also due in the use of tarpaulin for covering certain explosives. The depot Safety Officer and Ordnance Officer must be consulted prior to storage of these items in outside areas.

3.16.5.4.11. When retrograde materiel is stored on unimproved areas, assure that sufficient clearance is provided between ground and bottom of stored materiel. Weight of heavy containers will often press dunnage, pallets or skids into the ground and render them valueless as dunnage. Where dunnage tends to sink into the ground, cross-dunnage can provide an increased bearing surface. This usually consists of placing dunnage crosswise to the direction of the lower dunnage, and extending on each side the distance required (at least 6 inches) to provide proper bearing. Salvage lumber or landing mat can be used for this purpose.

3.16.5.4.12. Tarpaulins as weather protection covers are not generally satisfactory due to high cost, both in terms of procurement and their life expectancy, and in accumulated time expended to install, maintain and remove. Occasions may arise, however, where lack of a more suitable covering material and pressing immediate need for protection from the elements may make the use of tarpaulins necessary. The method proved most successful is a stack topped by an A-frame profile and covered with three tarpaulins. Such a method is illustrated in figure 4.

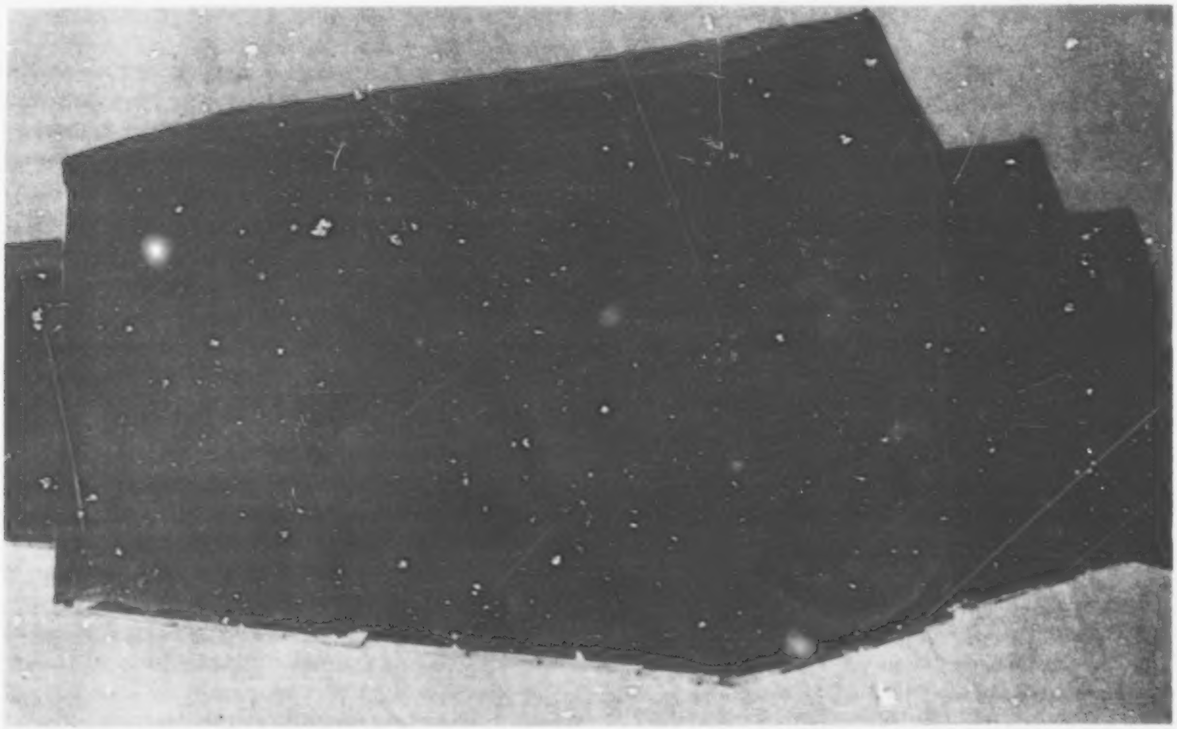


Figure 4.

3.16.5.4.13. In lieu of the tarpaulin method of covering stocks in open areas, much lighter weight material for use either as a stack cover or as an individual load cover is available. One of these materials, which has been tested and proved satisfactory for this purpose, is currently identified in specification L-P-00524 (GSA-FSS). This is a black, four-mil polyethylene material reinforced with nylon fiber. Various other colors and strengths are available. This material is easily and quickly applied. It effectively covers a stack when used in sheet form. It is equally effective when used as an envelope to cover a pallet load or other storage containers.

3.16.5.4.13.1. These covers shed water. They are relatively economical, expendable (though they may be reused a number of times) and present very little handling or stockage problem. Roll stock can be procured for stack covers and to make pallet covers. Individual covers in sizes to suit pallet or container profile can be made from raw stock with local heat sealing facilities or may be procured ready made.

3.16.5.4.13.2. Various means for attaching this type load cover to a container or pallet have been evaluated with satisfactory results. Drawstrings in the pallet load cover or stapling to the edge of the top deckboard of the pallet are both effective methods. Tape encircling the center of the pallet load, outside the cover, is also effective in lessening the effects of wind damag. Nail holes, small tears and rips can be repaired with water-resistant, pressure-sensitive tape.

3.16.5.4.13.3. Pallet load covers should completely inclose the load in envelope fashion except that the bottom of the cover will be left open for fastening to the load base and to permit air circulation within the stack of materiel. This method of lead covering is depicted in figure 5.

3.16.5.4.14. For covering entire stacks, the method depicted in figure 6 has proved satisfactory.

3.16.5.4.14.1. Relative savings for covering stacks (1,000 stacks) by the tarping method versus the four-mil polyethylene (specification L-P-00524) and netting combined show a distinct cost advantage in favor of the polyethylene. Costs include labor and material.

3.16.5.4.14.2. Previous tests, employing the black carbon impregnated four-mil polyethylene material reinforced with nylon fiber have shown that this materiel, when properly applied, is adequate for short term storage periods without the addition of nylon netting. Netting is not necesary unless the storage period will be greater than 120 days.

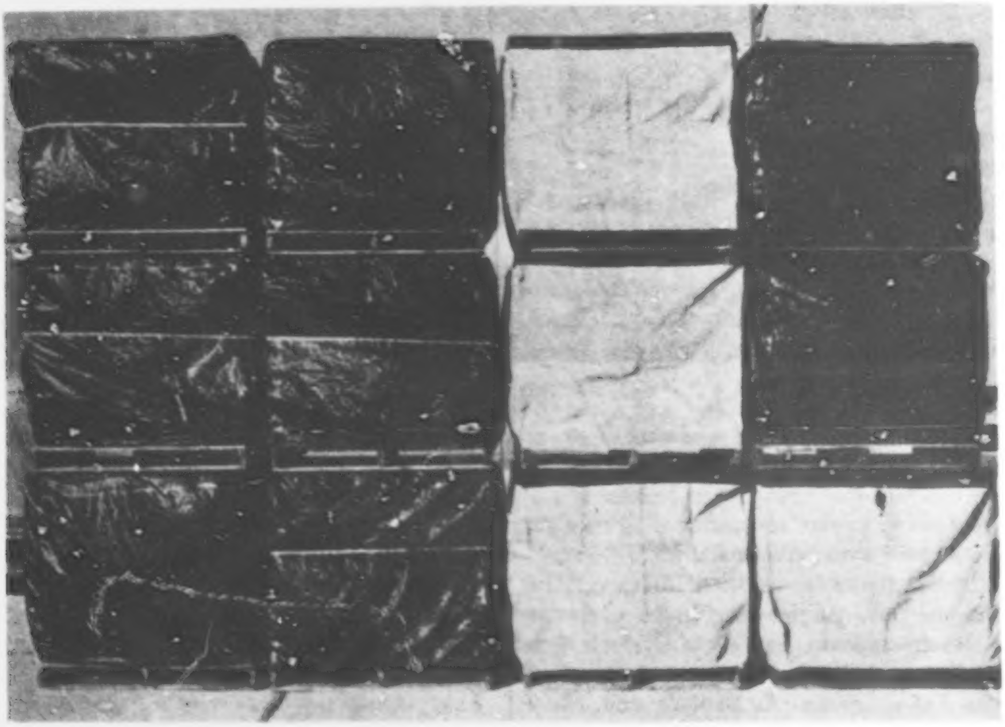


Figure 5.

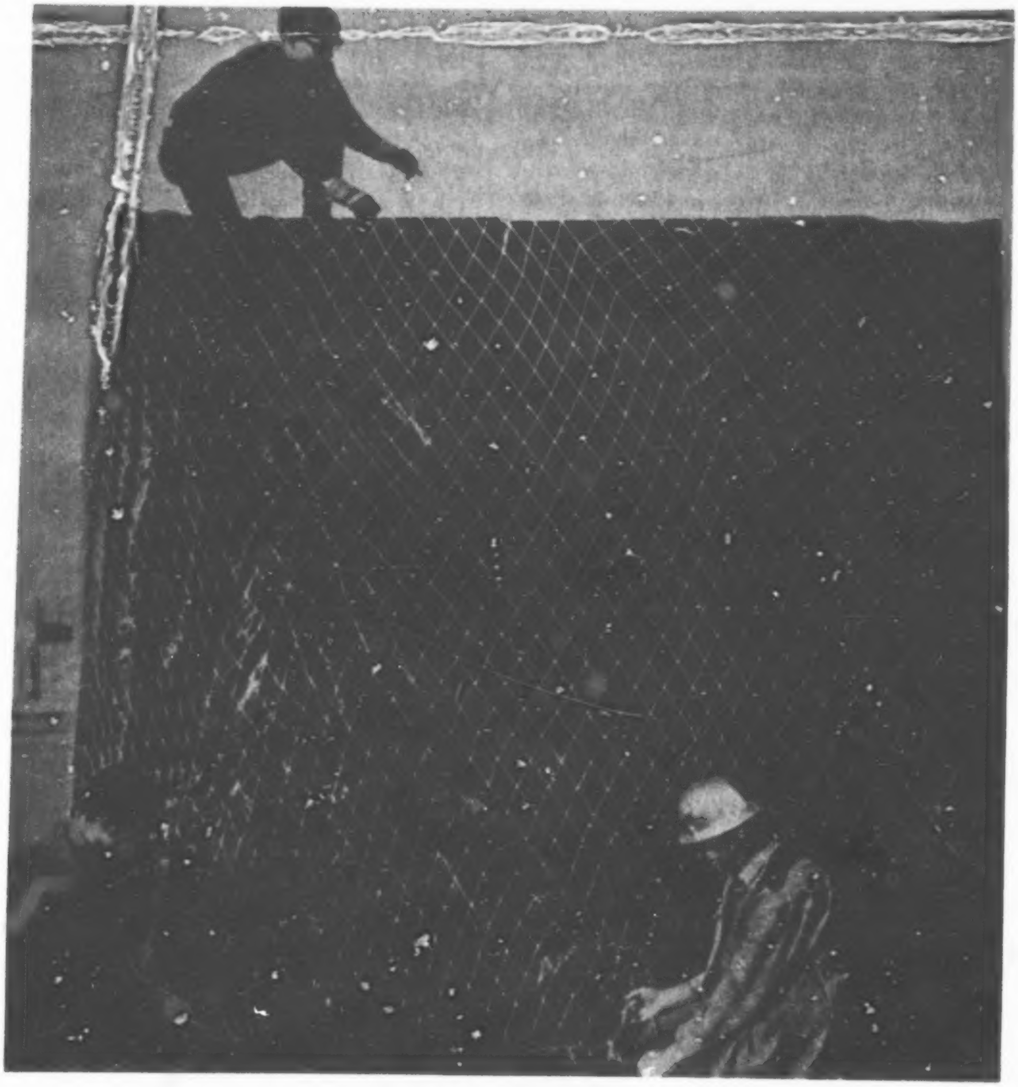


Figure 6.

3.16.5.5. *Segregation and Identification.* An assumption can be made that roll-up retrograde may arrive at depots in volume and pace greater than can be processed in day-to-day operations. This condition will almost invariably result in like items being stored in more than one location. Under these conditions, the cumulative quantity of a single item can be sufficient to justify the use of conveyorized production line techniques for identification, classification, processing and packing. Since production line planning and techniques are tenable and efficient only where producttion line quantities are known to prevail, the necessity for accurate location data and accumulation of dispersed backlog quantities of specific items prior to inspection can be appreciated.

3.16.5.5.1. The concept of mechanized movement of materiel should be practiced to the greatest practical extent. Even where inspection, classification, identification processes are performed "at the stack", full practical use should be made of conveyorized movement of materiel.

3.16.5.5.2. The requirement to accumulate dispersed backlog quantities of an item, prior to a production run for inspection and identification, can in itself dictate a conveyor type production line. For example, the multiple line item contents of backlog in a single storage location (or stack) can be run over conveyor lines for segregation of containers by line item onto pallets, or, the contents of stacks in multiple backlog locations may be run over conveyor lines placed in the near vicinity for accumulation of like items in the manner specified immediately abeve. The fact that backlog materiel is stored in open areas should not preclude consideration of this type operation. Inspectors should be stationed at these initial segregation points to identify and dispose of obvious salvage materiel or items previously designated for disposal action.

3.16.5.5.2.1. Once this segregation by item or type has been made, the materiel should be tagged or marked in a manner to permit quick and easy identificatiton of the lot and moved directly to the classification and inspection lines or moved to a covered storage location immediately adjacent to these lines.

3.16.5.5.3. A requirement for item identification and classification on a volume basis in depots must presuppose the availability of knowledgeable and trained personnel to perform these functions. Because these personnel may be called upon to inspect, identify, and classify many different types of items, they should be well trained in identification, inspection, and classification functions. Identification (through inspetcion) of materiel which will deteriorate readily is imperative. Only in this manner is it possible to assure corrective action can be taken before materiel deteriorates to the point where it is no longer economically reparable.

3.16.5.5.4. Classification and identification personnel must also receive instructions and pre-training on specific items to be processed.

3.16.5.5.5. Fully qualified identifiers, inspectors and classifiers for retrograde processing will be limited in number. For this reason, every effort should be made to concentarte identification and classifiication activities in a central location. By doing this, these technical skills can be teamed with adequate labor personnel to gain maximum utilization of the more limited skills.

3.16.5.5.6. To the greatest practicable extent each identification and/or classification station along the production process should be able to obtain available technical data in a manner to cause the least disruption or spend the least amount of time away from the respective station. The use of microfilm readers, radio communication, or overhead paper conveyors to furnish required data from a central source should be considered.

3.16.5.5.7. The functions of the production planners must include attainment of knowledge of the quantity of each item to be run, the ordering of all required packaging material and their availability at the proper time, the provision for training in item identification and classifiication techniques as required and the collection and recording of production data.

3.16.5.5.8. The need for organized and expeditious collection and disposal of debris should be recognized. Materiel entered onto inspection/identification/classification lines should be opened and ready. Personnel performing these technical functions should not be delayed by opening containers, removing packing material or disposing of debris.

CHAPTER 4

MATERIALS HANDLING EQUIPMENT AND PRINCIPLES

Section VI. UNIT LOADS

	Paragraph	Page
Policy	4. 6. 1	46–1
Principle of Unit Loads	4. 6. 2	
Unit Loads Defined	4. 6. 3	
Advantages of Unit Loads	4. 6. 4	
Unitizing Methods	4. 6. 5	46–1
Cube, Dimension, and Weight Requirements of Unit Loads	4. 6. 6	
Palletized Unit Load-Bonded for Shipment	4. 6. 7	
Guides for Constructing Palletized Unit Load for Shipment	4. 6. 8	
Glued Loads	4. 6. 9	
Strapping	4. 6. 10	
Storage Aids Applied to Capped, Collared, and Framed Loads	4. 6. 11	
Type of Bonding According to Items	4. 6. 12	
PALLET PATTERN SELECTION TABLE	Appendix I	
PALLET PATTERN OUTLINE TABLE	Appendix II	

4.6.1. Policy

Methods, materials and techniques to be used in the formulation of palletized unit loads will be in accordance with TM 743-200 and MIL–STD–147. Palletized unit loading on standard, general purpose, 40- by 48-inch pallets will be accomplished for the storage and shipment of materiel whenever the following conditions are met:

4.6.1.1. Dimensions of individual containers of the same size permit at least 80 percent utilization of the bottom area of the pallets.

4.6.1.2. Overall cube, dimensions, and weight requirements are in accordance with paragraph 4.6.6.

4.6.2.—4.6.4. See TM 743-200.

4.6.5. UNITIZING METHODS

(Also see TM 743-200.)

Containers having a minimum width and length of 6 inches and a maximum width and length of 43 by 52 inches may be palletized on standard, general purpose 40- by 48-inch pallets. The pallet Pattern Selection Table (app. I) has been developed to specify by the width and length of a container, the interlocking and noninterlocking pallet patterns with bottom area efficiencies greater than 80 percent. The bottom area efficiency is defined as the total area covered by the first tier of container bottoms compared to the maximum usable pallet area of 43 by 52 inches. One-hundred percent bottom area efficiency occurs when the total usable area of 43 by 52 inches is utilized. If a container size does not fall within a pallet pattern outline (app. II), palletization will not be accomplished on a 40- by 48-inch pallet unless the container size may be altered without significantly increasing overall costs (e.g., required repacking during care and preservation or at time of shipment).

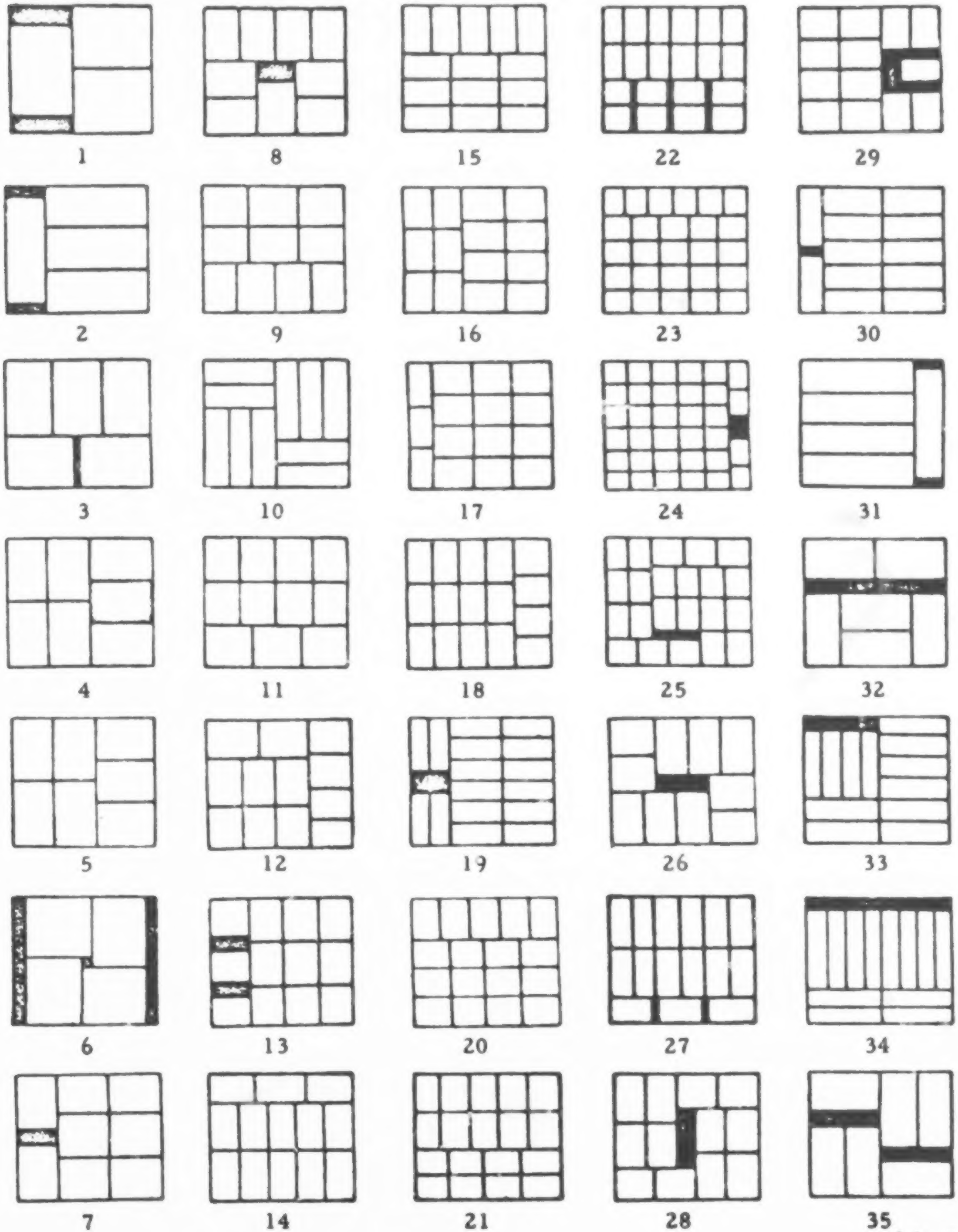
4.6.6.—4.6.12. See TM 743-200.

Pages 46A–1 through 46A–6 are fold-ins
Located in back of manual

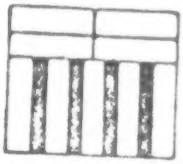
APPENDIX 46-2

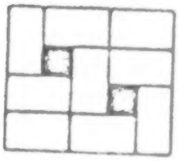
Pallet Pattern Outline Table

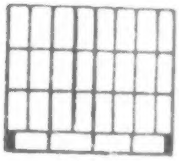
Pallet patterns for Army use will be as follows:

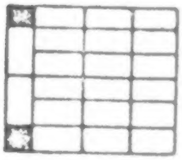

1
8
15
22
29
2
9
16
23
30
3
10
17
24
31
4
11
18
25
32
5
12
19
26
33
6
13
20
27
34
7
14
21
28
35

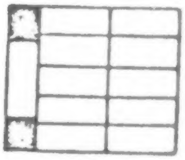
APPENDIX 46-2 (Continued)

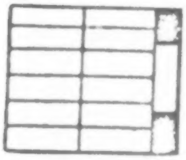

36

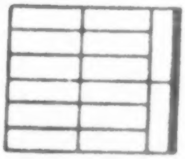

37

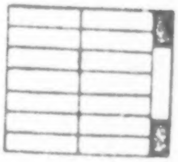

38

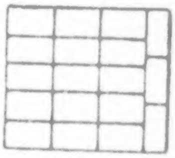

39

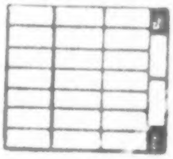

40

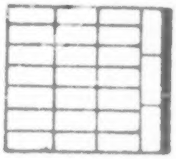

41

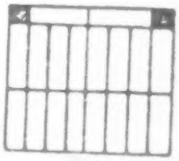

42

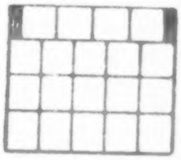

43

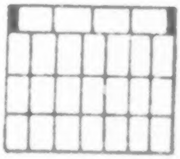

44

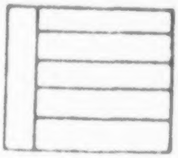

45

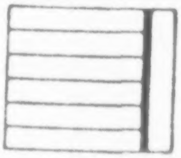

46

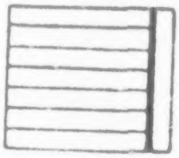

47

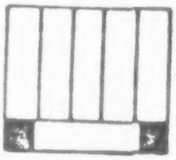

48

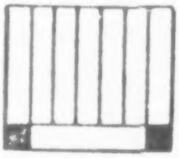

49

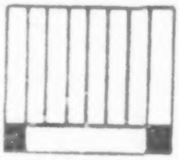

50

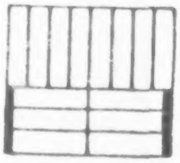

51

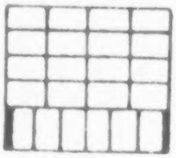

52

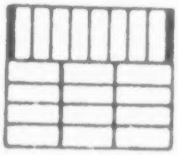

53

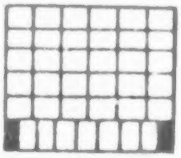

54

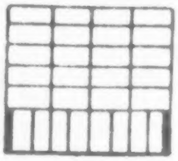

55

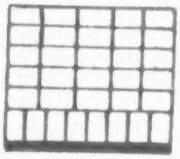

56

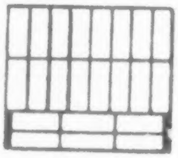

57

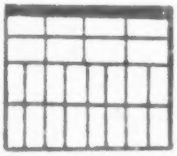

58

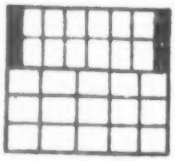

59

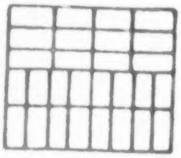

60

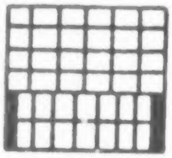

61

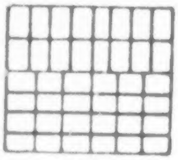

62

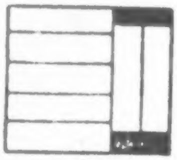

63

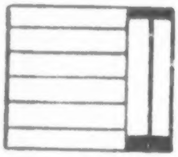

64

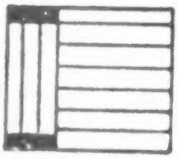

65


66

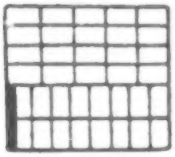

67

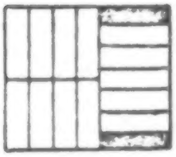

68

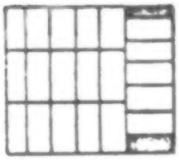

69

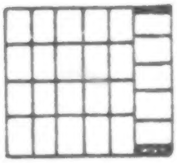

70

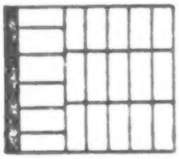
APPENDIX 46-2 (Continued)

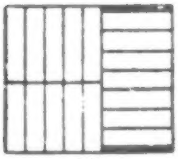

71

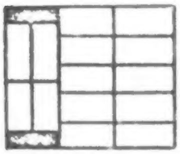

72

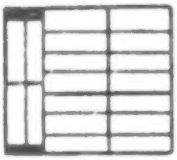

73

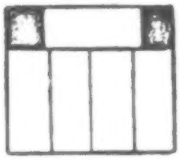

74

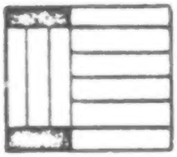

75

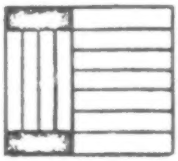

76

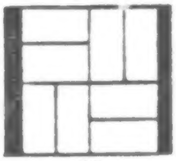

77

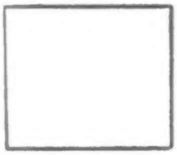

78

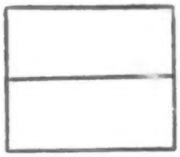

79

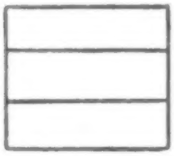

80

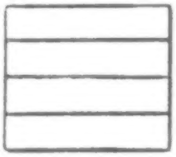

81

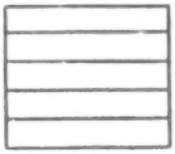

82

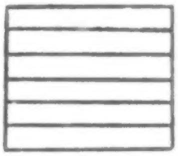

83

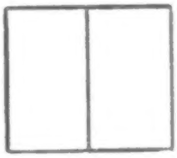

84

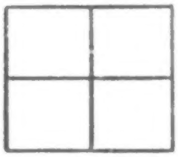

85

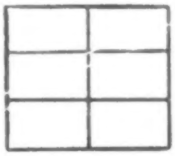

86

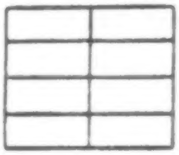

87

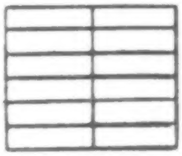

88

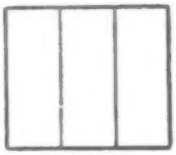

89

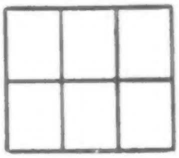

90

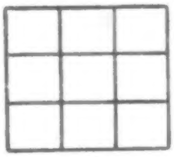

91

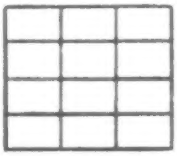

92

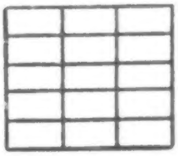

93

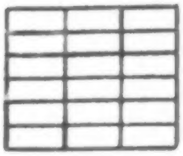

94

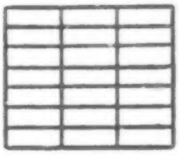

95

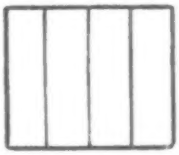

96

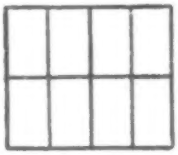

97

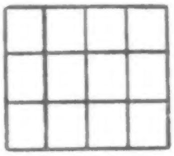

98

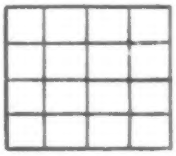

99

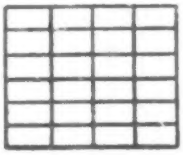

100


101

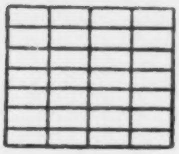

102

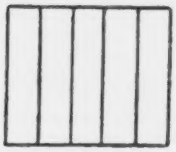

103

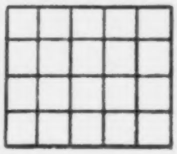

104

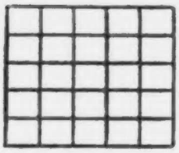

105

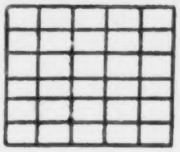
APPENDIX 46-2 (Continued)

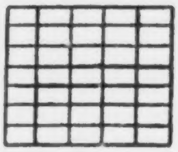

106

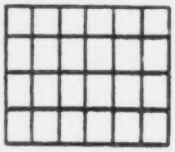

107

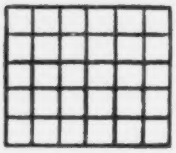

108

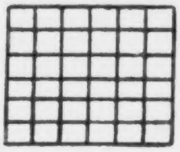

109

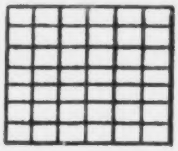

110

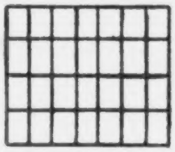

111

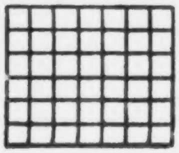

112

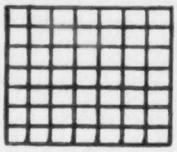

113

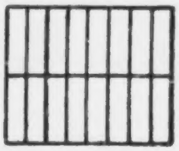

114

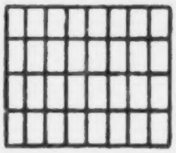

115

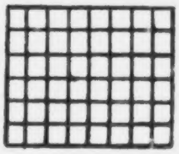

116

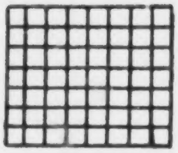

117

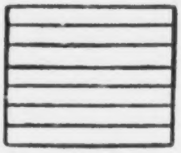

118

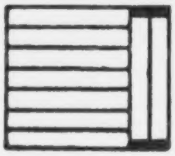

119


120


121


122


123


124

CHAPTER 4

MATERIALS HANDLING EQUIPMENT AND PRINCIPLES

Section VII. EQUIPMENT AND LABOR

	Paragraph	Page
Policy	4.7.1.	47-1
General	4.7.2.	47-1
Functions	4.7.3.	47-1
Using activity responsibilities	4.7.4.	47-2
Control and assignment procedure	4.7.5.	47-2
Training and licensing of personnel	4.7.6.	47-3
Equipment servicing and maintenance	4.7.7.	47-3
Overnight parking, materials handling equipment	4.7.8.	47-4
Equipment transfer	4.7.9.	47-4

4.7.1. Policy

To economically meet labor and equipment demands within the functional areas of major storage activities, only the number of labor personnel and units of powered materials handling equipment necessary for the minimum daily workload will be permanently assigned to these areas. Periodic demands for additional labor and equipment units will be provided as required.

4.7.2. General

This section is concerned with the criteria and circumstances for the controlled utilization of men and equipment in storage operations.

4.7.2.1. An organizational element (pool) of labor and equipment resources may be established and operated whenever warranted; see paragraph 7.0.2, TM 743-200. Whenever establishment of a pool is not deemed warranted, an Equipment and Labor Coordinator will be designated to perform the functions outlined in paragraph 4.7.3.

4.7.2.2. An established pool will be composed of the labor personnel, materials handling equipment operators, and equipment that will render service to more than one organizational element. As a general rule, personnel and equipment utilized in technical or highly skilled operations, for which day-to-day replacements are not available from the pool, will not be assigned to the pool. Locomotive operators, welders, and welding equipment are examples of this exception to pool assignment.

4.7.2.3. Organizational placement of labor and equipment pool will be at the discretion of the installation commander; however, it is generally desirable that placement be within the organizational element requiring the greater portion of the services of the pool activity.

4.7.3. Functions

4.7.3.1. Assure the providing of labor, equipment and equipment operators in support of depot operations.

4.7.3.2. Dispatch pooled personnel and equipment to using organizations on the basis of demands and work priorities.

4.7.3.3. Maintain records of labor, materials handling equipment and vehicles, including inventory, utilization records by location, dispatching such records and reports as required.

4.7.3.4. Assure effective utilization and proper placement of personnel and equipment through daily liaison with using activities in order to obtain workload data.

Note. TA 50-916 will be consulted for guidance in determining maximum allowable equipment levels. In

best copy available

this respect, utilization experience will be duly considered to insure against obtaining unnecessary equipment, even though within T/A allowances.

4.7.3.5. Provide a training and licensing program for all equipment and vehicle operators.

4.7.3.6. Assure effectiveness of the total first echelon maintenance program.

4.7.3.7. Collaborate with the depot maintenance activity in scheduling of equipment in need of maintenance and to assure that equipment is maintained in good operating condition.

4.7.3.8. Initiate requests to higher authority for additional labor and equipment resources, as required; report excess labor and equipment.

4.7.3.9. Maintain a schedule of special projects to be accomplished in order of their priority, during those periods when normal equipment and labor demands are lessened.

4.7.3.10. Maintain a list of all depot personnel qualified as equipment operators who can be used during emergency.

4.7.3.11. Coordinate the necessary details of loans, and transportation between jobs of personnel and equipment transferred from one activity or work location to another.

4.7.3.12. Hold frequent meetings with users of labor and equipment for the purpose of reevaluating requirements and assuring proper and efficient utilization.

4.7.4. Using Activity Responsibilities

4.7.4.1. Assure performance of first echelon maintenance by assigned equipment operators.

4.7.4.2. Coordinate equipment and labor requirements of each operating element under their jurisdiction.

4.7.4.3. Furnish timely requests to the equipment and labor pool or the equipment and labor coordinator for operating requirements.

4.7.4.4. Insure proper and effective utilization of personnel and equipment, prompt reporting of pool absentees, and up-to-date knowledge of where personnel and equipment are being used.

4.7.4.5. Assure prompt reporting of maintenance requirements and excess equipment and labor by using elements.

4.7.4.6. Maintain "special project" backlog such as packing, marking for stock, floor cleanup, etc., consisting of projects which should be accomplished when normal workload permits.

4.7.5. Control and Assignment Procedure

4.7.5.1. Personnel.

4.7.5.1.1. Pool personnel normally will include, but will not be limited to, laborers, labor foremen, materials handling equipment operators, truck drivers, and, when feasible, drivers assigned to administrative vehicles.

4.7.5.1.2. With exception of drivers assigned to administrative vehicles, pooled personnel may be divided into two groups to reduce administrative controls and improve job incentive.

4.7.5.1.2.1. Regularly Assigned. This group will consist of the minimum quantity of personnel and equipment required to meet the minimum daily requirements of each using activity. They will be assigned to and retained by that using activity until their services are no longer required. Personnel in this group will be selected on the basis of past assignment, training, experience, and familiarity with type of work involved. They will report directly to the using activity until reassigned.

4.7.5.1.2.2. Assigned on a Day-to-Day Basis. This group will consist of personnel and equipment assigned to working organizations on the basis of daily fluctuations in workload. They will be rotated on the basis of priority demands in any operation or using unit. This group will supplement regularly assigned personnel and equipment as required.

4.7.5.2. Control and Utilization.

4.7.5.2.1. Personnel and equipment are under the control of the using section during period of use.

4.7.5.2.2. Inefficient and unauthorized utilization of personnel or equipment will not be condoned. When on-the-spot remedial action is not taken by supervisors, the division chief or other appropriate command echelon will initiate corrective action.

4.7.5.3. Assignment.

4.7.5.3.1. An assignment method which has proved effective in central pool allocation of labor and equipment is outlined below.

4.7.5.3.1.1. Using organizations furnish pool activity a daily request reflecting work to be performed, number of personnel assigned, number of additional personnel required, name and location of the individual to whom personnel will report, and the quantity and type of equipment needed. Where necessary, requests also reflect priority code for work which is to be performed.

4.7.5.3.1.2. Requests for labor or equipment are based on a minimum eight-hour usage period. When unforeseen circumstances result in an excess of personnel or equipment at any time during the day, such excess is immediately reported to pool headquarters for assignment to other activities.

4.7.5.3.1.3. Emphasis is given to making specific job assignments to qualified personnel who work together efficiently, and are experienced in the operation. Equipment operators are regularly assigned to the same equipment when feasible.

4.7.5.3.1.4. Transfer of pool equipment or manpower between users is not made without coordination with pool headquarters.

4.7.5.3.1.5. Whenever pooled personnel or equipment requirements exceed the total available, assignments are made on a basis of operational priority. Decisions in controversial cases are rendered at an appropriate level.

4.7.5.4 Assignment Board.

4.7.5.4.1. An Equipment Assignment Board will be maintained at the control office of the equipment and labor pool. This board will visibly reflect the location of pool equipment on a current basis. Refer to figure 16, chapter 4, section 1, TM 743-200.

4.7.5.4.2. When deemed advisable for close control of work assignment locations, pooled personnel assignments may be reflected in like manner.

4.7.5.4.3. Information shown will include:

4.7.5.4.3.1. Total number of pool personnel, identified as regularly assigned and assigned on a day-to-day basis.

4.7.5.4.3.2. Location of pool personnel and equipment by using activity.

4.7.5.4.3.3. Equipment assignment data will include type and capacity.

4.7.6. Training and Licensing of Personnel

The equipment and labor pool will, in collaboration with appropriate training elements of the installation, conduct training courses for pool personnel. This training will include but will not be confined to explanation of pertinent rules and regulations, safety measures, first aid practices, and on-the-job training. Operator training for materials handling equipment and other vehicles will also be provided (see sec 1, chap 8, TM 743-200). Once licensing requirements have been met, the pool will issue appropriate license to operators.

4.7.7. Equipment Servicing and Maintenance

4.7.7.1. Responsibilities. The chief of the equipment and labor pool will collaborate with all interested installation elements in establishing local procedure and criteria for first echelon maintenance rendered by equipment operators and the operational servicing of such equipment. He will take an active and leading part in preparing and installing the necessary step-by-step procedures developed in this connection. He will also maintain continuous liaison with all concerned activities to assure that servicing and first echelon maintenance procedures are complied with.

4.7.7.2. Gasoline-Powered Equipment. Gasoline tanks will be filled before or after regular duty hours and or during lunch periods. Normally gasoline and oil will be dispensed from a truck or trailer equipped with pump. Materials handling equipment will not be refueled inside warehouses or similar essential buildings. Refueling will be accomplished at least 20 feet from above mentioned buildings and at least 100 feet from any buildings containing explosives.

4.7.7.3. Battery-Powered Equipment. A battery rectifier charger for selected units of materials handling equipment normally will preclude the maintenance of extensive standby battery stocks and enhance economy of operations. Battery rectifier charge units, when used, should be located strategically within the warehouse area(s) in order to shorten the runs or hauls of materials handling equipment or transfer of batteries between operating and recharging locations. Recharging of batteries should be accomplished during nonoperating hours. Since most materials handling equipment will not perform heavy duty for a full work period without battery recharge, some provision will be made for battery exchange to preclude loss of equipment to an operation during working hours. Moreover, when battery-powered equipment is used for multiple shift duty, exchange batteries should be available.

4.7.7.4. Reports.

4.7.7.4.1. DA Form 2400 (Equipment Utilization Record) will be furnished daily to each materials handling operator. Pertinent data will be inserted by the operator or, as applicable, by the issuing office, prior to the start of the day's operation. Other required data will be inserted by the operator during and after operation. This data will be periodically verified by pool supervisors or foremen.

4.7.8. Overnight Parking, Materials Handling Equipment

4.7.8.1. The equipment referred to in this paragraph normally consists of forklift trucks and tractors regularly or semiregularly assigned to a specific area or user.

4.7.8.2. The establishment of overnight parking areas for this category of equipment, adjacent to the normal working areas, will permit better utilization of the materials handling equipment fleet. The principal advantage is substantial reduction in travel time over that required to bring all equipment from a common pool at the beginning of the work day and to return to the same location at the close of the day.

4.7.8.3. Overnight parking of equipment at or near the worksite is therefore encouraged and should be in effect unless justification exists for contrary methods.

4.7.8.4. When this system of dispersed parking is used, the appropriate operating official, in collaboration with the installation Fire Marshal, should establish sufficient, properly identified overnight parking spaces at designated points throughout the area to accomplish the defined advantages.

4.7.8.5. The areas specified may be at some nearby point outside the building in which equipment is employed or an end section area within a building, or both. When the equipment is stored inside warehouses, a minimum separation of 10 feet will be maintained between the equipment and combustible materiel. The equipment will be inspected, before it is left, for mechanical defects and the wheels blocked to prevent movement. Battery powered equipment will not be stored in buildings containing explosives or ammunition.

4.7.8.6. No hard and fast rule for establishment of these areas can be prescribed because of the variety of local conditions. Nevertheless, certain factors must, of necessity, be considered in selection of preferred method:

4.7.8.6.1. An inside area will be much more satisfactory during inclement weather when equipment is hard to start, and more convenient to the operators.

4.7.8.6.2. Greater overall protection can be afforded the equipment in inside parking areas.

4.7.8.6.3. An outside parking area will afford easier servicing of equipment and make it much easier to spot idle equipment during the work day.

4.7.8.6.4. Outside parking areas may be considered permanent while inside areas must frequently be relocated, subject to space requirements for incoming supplies.

4.7.9. Equipment Transfer

4.7.9.1. For intra-depot transfer of materials handling equipment, two types of retrievers are available, (1) single unit tow-type trailers that may be used in train fashion to haul multiple units, and (2) large multi-unit self-powered carriers, with hydraulic-operated bed, capable of loading or discharging materials handling equipment at either dock or ground level.

4.7.9.2. The former is adaptable to short haul over improved roadways. The latter has over-the-road transport capability and is particularly adaptable for traversing nonsurfaced roadways, e.g., igloo storage areas.

CHAPTER 4

MATERIALS HANDLING EQUIPMENT AND PRINCIPLES

Section VIII. CONTAINER AND DUNNAGE FABRICATION

	Paragraph	Page
General	4.8.1	48-1
Policy	4.8.2	48-1
Scope	4.8.3	48-1
Responsibilities	4.8.4	48-1
Operating factors	4.8.5	48-2
Forms	4.8.6	48-2

4.8.1. General

It is essential that modern container and dunnage fabricating facilities, together with a cadre of trained personnel, be maintained to furnish the required service for peacetime requirements and also to provide a readily expandable source for this type service on an accelerated basis in event of emergency or mobilization.

4.8.2. Policy

A container and dunnage manufacturing facility will be maintained at each Army depot for manufacture or assembly of such items as fiberboard and wood shipping containers which, because of limited quantities involved, specialization of item, or other extenuating circumstances, cannot be obtained through normal federal, military, or commercial supply sources. Fiberboard carton manufacturing machines are intended to supply small quantity, unpredictable, and short-notice demands. Depots should not manufacture paperboard and fiberboard containers when (1) containers are available through Government supply activities and can be delivered in time to meet established shipping dates, (2) containers are available through a commercial supplier at a lesser or equal cost and the lead time is sufficient to meet established shipping dates. Pallet repair and construction (only when authorized by USASMC or appropriate oversea commander) and car gates and dunnaging materials fabrication will also be performed by the container and dunnage manufacturing facility. This policy asserts the use of commercial container sources where (1) time element permits, (2) quantities of boxes required are sufficient to interest bidders, (3) such source of supply proves more economical than production by the local facility.

4.8.3. Scope

These instructions are applicable to all Army installations operating container and dunnage manufacturing facilities and will be used as a guide in the formulation of local operating procedures.

4.8.4. Responsibilities

In accordance with the foregoing policy, the dunnage and fabricating facility will be responsible for the following:

4.8.4.1. Establishment of production schedules based on priority of requirements as furnished by using element and to effect maximum use of personnel and equipment.

4.8.4.2. Maintenance of an up-to-date library of technical data and specifications governing the fabrication of applicable items.

4.8.4.3. Maintenance of work order and production control registers and required suspense files for all work order requests received.

4.8.4.4. Determination of requirements for and requisitioning of all necessary supplies and equipment used in the operation.

4.8.4.5. Fabrication of case liners, boxes, cartons, crates, and dunnage.

4.8.4.6. To mill, fabricate, repair, reclaim, and install wood products as required.

4.8.4.7. To pack and crate material as required.

4.8.4.8. To stay, block, brace, and dunnage outgoing shipments (if organizationally desired).

4.8.4.9. Performance of preventive maintenance on tools and equipment.

4.8.4.10. Maintenance of a stockpile of standard size containers, case liners, etc., used by depot activities, established on basis of periodic requirements submitted by using activities.

4.8.4.11. Performance of saw filing and gumming operations for all depot elements.

4.8.4.12. Maintenance of production records and required data for preparation of cost and lumber control reports. (Costing of individual work orders will be accomplished to the extent considered necessary by the installation commander for administrative purposes and to assure that the cost of local fabrication is economical, compared with procurement from commercial sources. Computation of procurement costs versus local manufacturing costs will consider all costs incident to procurement, delivery, and issue, including processing, storage, and handling costs of the installation contracting and property officers.)

4.8.5. Operations Factors

Fiberboard and triple-wall corrugated boxes will be used in the storage and shipment of materiel to the extent practicable and permissible under current specifications.

4.8.5.1. Each manufactured fiberboard box will bear a classification marking reflecting the capabilities and characteristics of the fiberboard. Markings will comply with the pattern set forth by the uniform or consolidated freight classification for domestic type boxes, and in the instance of W- and V-types, with the requirements set forth in Federal Specification PPP-B-636. Triple-wall fiberboard boxes will be marked in accordance with requirements of PPP-B-640.

4.8.5.2. Depots should maintain a sufficient variety of fiberboard grades and types within their operating supplies to assure the manufacture of containers from the most economical stock board that will satisfy the packaging and packing requirement.

4.8.5.3. Lumber normally will be precut and backlogged for nailing machines. Precut container components awaiting assembly by nailing machines will be stored in the cut lumber bank, adequately marked to indicate work order number and piece description (e.g., "tops," "sides," "bottoms," etc.). Cut lumber will be stored on dollies constructed in a manner to be transported on their own wheels or by forklift truck. Warehouse trailers should not be used for storing cut lumber.

4.8.5.4. Manufacture of case liners and shrouds should be scheduled in advance of, or concurrently with, the fabrication of boxes and crates and delivered with the containers in which they are to be used.

4.8.5.5. Replenishment of the stock pile of standard containers, liners, and dunnaging materials should be accomplished during slack work periods.

4.8.5.6. Used boxes will be utilized for storage and shipment of materiel except when space loss after allowance for a minimum use of dunnage exceeds an aggregate of 3 inches in dimension, or when such use does not conflict with the provisions of specifications or directives. Where demands for box quantities are over 25 each, the boxes should be fabricated to fit the item with no loss of cubage. Old markings on used boxes to be reused must be obliterated.

4.8.5.7. Used wooden containers not required for use will be disposed of through the property disposal officer unless the value of reclaimable lumber in reuse exceeds the anticipated profits from sale.

4.8.6. Forms

DA Form 2978 (Container and Dunnage Fabrication Work Order), DA Form 2979 (Container and Dunnage Fabrication Work Order and Production Control Register), and DA Form 2980 (Container and Dunnage Fabrication Cutting and Dunnage Fabrication Cutting and Assembly List) should be utilized in connection with the ordering, production, planning, and control of shipping containers and related items. Use of these forms may be suspended when any installation has developed a procedure utilizing card format for data gathering and subsequent processing by machine.

CHAPTER 5

STORAGE OF SPECIAL COMMODITIES

Section II. AMMUNITION (CLASS V MATERIEL)

	Paragraph	*Page*
Purpose and scope	5.2.1.	52-1
General	5.2.2.	52-1
Safety and security	5.2.3.	52-1
Storage	5.2.4.	52-2
Receiving	5.2.5.	52-5
Shipping and outloading	5.2.6.	52-5

5.2.1. Purpose and Scope

This section implements and augments the policies and principles governing the storage, issue, preservation and packaging of ammunition and explosives as established in DOD 4145.19-R-1. These policies are mandatory for Class II ammunition storage depots under the control of the US Army Materiel Development and Readiness Command (DARCOM) and may be used for guidance by all other U.S. Army installations. The term, class V materiel, applies to all items of supply which are considered to be ammunition, or are explosive in nature, or the use of which is restricted to ammunition or explosive materiel, e.g., packing materiel. Term includes conventional ammunition, guided missiles, large rockets, nuclear materiel, special project items, and chemical ammunition.

5.2.2 General

5.2.2.1. Department of the Army standards for the storage and handling of ammunition wnd explosives will be maintained. Detailed operational procedures will be found in the publications referenced in subsequent paragraphs. Military ammunition and explosives are products of war and are manufactured primarily to kill and destroy. Such products have inherent hazards that affect all handling operations from time of manufacture until expended in service. Knowledge of these hazards dictates that ammunition and explosives must be handled, stored, and shipped in a manner that will afford optimum protection against deterioration, accidental ignition, and detonation. Instructions for handling retrograde materiel are contained in TM 750 series and chapter 3, section XVI of this manual.

5.2.3. Safety and Security

5.2.3.1. Safety.

5.2.3.1.1. Safety rules and regulations contained in Army regulations and technical manuals clearly state those considered mandatory and those considered advisory. Complete information on safety regulations for Class II installations or procedures for obtaining waivers to these regulations are contained in AR 75-85, TM 39 series, and DA publications for large rockets and missiles as listed in DA Pamphlet 310-4.

5.2.3.1.2. CONUS and oversea installations under the control of DARCOM are governed by the safety requirements of AR 75-85, AR 385 series, TM 9-1300-206, TM 39 series, TMs 9-1300 and 9-1400 series for large rockets and missiles and implementing directives published by applicable major commands.

5.2.3.2. Security.

5.2.3.2.1. Documents and other material pertaining to classified ammunition and components will be safeguarded in accordance with the provisions of AR 380 series. The installation commander is responsible for security. The security classification of ammunition and components is listed in TB 9-380-1, TB 9-380-1, TB 9-380-101, SB 9-131 and appropriate supply catalogs.

5.2.3.2.2. Classified ammunition will not ordinarily be stored in magazines containing unclassified items. However, when exceptional instances require compatible classified and unclassified items to be stored together, the entire magazine will be assigned the highest security classification of any item therein.

5.2.3.2.3. Warehouses, magazines, and igloos in which pilferable ammunition is stored must have special door locks as required by AR 190-11. The keys will be centrally controlled and will be issued on a signature basis to authorized individuals. In addition, all other openings in such buildings will be barred or otherwise adequately protected against entry.

5.2.4. Storage

5.2.4.1. Use of Storage Facilities. Only structures designed, designated or isolated for the storage of explosives, ammunition or loaded components should be used. When specially constructed magazines are not available, substitute buildings must afford suitable protection against moisture and excessive changes in temperature. Adequate ventilation is necessary. Open storage is undesirable and will be used only as an emergency expedient when authorized by appropriate command headquarters. Serviceable ammunition on which maintenance and inspection has been completed should be placed in permanent type storage. When temporary storage is used, it will be designed to minimize handling and cost during storage and outshipment.

5.2.4.2. Types of Facilities. Types of ammunition facilities and preferred usage are defined in TM 9-1300-206.

5.2.4.2.1. Fusible Links on Magazines. Special attention must be given to fusible links on magazines. The following general information and specifications apply to fusible links for door and rear-stack ventilators on magazines.

5.2.4.2.1.1. The melting point will be between 155° and 165° F. The minimum rated breaking strength will be 20 pounds for the door ventilator link and 8 pounds for the rear-stack ventilator link. The fusible link used will be on the current approved list published by the Underwriters Laboratories, Inc., or other recognized testing laboratories.

5.2.4.2.1.2. Fusible links will not be painted.

5.2.4.3. Storage Drawings. A list of current storage drawings is published by the applicable commodity command and distributed to all Army installations and activities storing ammunition.

5.2.4.4. Space Utilization.

5.2.4.4.1. Utilization of storage space to obtain maximum density will be accomplished in accordance with guidance contained in pertinent drawings.

5.2.4.4.2. Split storage of ammunition items with the same lot number will be minimized. When this type storage is necessary the facilities used should be in close proximity, preferably within the same block of magazines, however, one magazine should not be used for the storage of the complete stock of an item.

5.2.4.4.3. Storage of ammunition in standard above-ground magazines will provide access aisles of sufficient width to accommodate forklift trucks at doors 1, 3, and 5.

5.2.4.4.3.1. Aisles should also be provided to facilitate the use of materials handling equipment and conduct of inventory and surveillance operations. Although direct access to all lots by MHE is desirable, operating areas and aisles need not be provided when storage space requirements approach or exceed the storage space available.

5.2.4.4.3.2. The determination regarding the necessity to utilize this space for storage will be made by the MACOM concerned. Personnel access aisles to all lots will be provided for inventory and surveillance purposes.

5.2.4.5. Rewarehousing. Rewarehousing of ammunition will be kept to the minimum consistent with safety and operational needs. The following instructions cover specific types of rewarehousing in CONSUS depots storing ammunition.

5.2.4.5.1. Incidental rewarehousing applies to the movement of stock during receipt, storage, issue, maintenance, modification, renovation or demilitarization activities. Incidental rewarehousing actions should not encompass more than 10 percent of the total tonnage han dled in all of the chargeable activities on an annual basis. Stock movements should be accomplished not more than 20 working days prior to the initiation of the activity which will create the need for the movement, or within 20 working days after the completion of the activity which necessitated the movement.

5.2.4.5.2. Safety rewarehousing covers movement to eliminate or minimize an unsatisfactory or hazardous storage condition. All stock movements necessitated by revised quantity distance tables and explosive limits are included in this category.

5.2.4.5.3. Special rewarehousing covers all rewarehousing projects not mentioned above.

5.2.4.5.4. Rewarehousing and associated intra depot location changes of Class V related items will be controlled by use of DA Form 4508, (Ammunition Transfer Record). This multi-purpose form will also be used in reidentification and reclassification actions and deletions in stocks except as a direct result of shipment. Specific procedures on the use of this form will be developed at appropriate CONUS and OCONUS Commands. DA Form 4508 will be requisitioned through normal AG publications supply channels.

5.2.4.6. Termite Control.

5.2.4.6.1. An overall policy has been established for the control of subterranean termites in ammunition magazines. A method which isolates the structure from these termites by providing a layer of poison soil under slabs or around footings is the most effective. The Corps of Engineers advocates this type of treatment for new structures. The principal also is readily adaptable to structures already in place.

5.2.4.6.2. Earth-covered magazines will be treated only when vacant. Standard above-ground magazines or warehouses may be treated one section at a time, if necessary. Treatment is the responsibility of the Post Engineer.

5.2.4.7. Protection Against Moisture Damage. Every effort should be made to protect wooden boxes from moisture since moisture will increase the possibility of attack by various types of fungi, particularly mildew. To prevent this, receipts of wooden containers of ammunition will be treated as follows:

5.2.4.7.1. When containers show signs of moisture on the surface, whether mildewed or not, they will be stored with dunnage placed between layers and with a space of 6 inches between stacks. Dunnage should be ½ to 1 inch thick and not over 4 inches wide. Boxes which have cleats on top do not require dunnage between layers; however, such boxes should be placed in magazines so that the cleats will run parallel to the length of the magazine. Every fourth layer will have dunnage strips with the length of the strips perpendicular to side walls to establish stability of stacks.

5.2.4.7.2. Magazines in which moist containers of ammunition are stored will be kept well ventilated. Some installations indicate that high temperatures are prevalent in magazines where boxed ammunition is stored. The containers were apparently dry when stored, but over a period of several months, temperatures in magazines rose above normal, and boxes became wet and moldy. Care should be used when entering such magazines, since oxygen deficiency may accompany these conditions. In all reported instances, ammunition was in wooden boxes and had been in outside storage prior to transfer to igloo storage.

5.2.4.7.3. When wet and moldy box conditions are found, a comparison of magazines containing boxed and unboxed ammunition will be made by temperature checks. These temperatures will be compared with temperatures recorded daily at the installation for extent of deviations from normal. If abnormally high temperatures are developing, each affected magazine will be placed under close surveillance, and temperature readings will be checked daily. A report will be submitted immediately to the responsible headquarters.

5.2.4.7.4. Palletized loads with definite indications of mildew or moisture will be treated in the same manner as individually stacked boxes. Palletized loads will be broken down and each container inspected as required.

5.2.4.8 Palletization or Unitization.

5.2.4.8.1. Boxed ammunition is generally palletized or unitized for storage and transport. Shipments of boxed ammunition to oversea destinations will be palletized or unitized (as applicable) in accordance with the following drawings:

5.2.4.8.1.1. Drawing 19/48/4020/1-2-5-11-PA1000 (for palletization of boxed ammunition, other than WP- or PWP-filled items, in boxes less than 27 inches in length).

5.2.4.8.1.2. Drawing 19/48/4015/12P/1000 (for palletization of WP- or PWP-filled ammunition).

5.2.4.8.1.3. Drawing 19/48/4020/1-2-5-11-PA1001 (for unitization of boxed ammunition, other than WP- or PWP-filled items in boxes 27 inches or more in length).

5.2.4.8.2. Propelling charges in cylindrical containers should be palletized in accordance with DRC Ammunition Center interim drawings AMXSV-4044, Rev A, or AMXSV-4045 through 4050, as applicable. Drawing 19/48/4042/1-2-5-11-14 PA1000, Rev 1 is being prepared. When that revision is available, it will supersede the interim drawings.

5.2.4.9. Materials Handling Equipment.

5.2.4.9.1. DRC is responsible for determination of the types, characteristics, and requirements for the materials handling equipment used within the DRC CONUS depot system.

5.2.4.9.2. Requests for nonstandard items should be submitted by CONUS depots to the Commander, US Army Materiel Development and Readiness Command, ATTN: DRCIS-S, 5001 Eisenhower Avenue, Alexandria, VA 22304, through the appropriate commodity command. Oversea installations should submit requests to the area command headquarters.

5.2.4.10. Inventories. Inventories of ammunition will be accomplished in accordance with the provisions contained in AR 740-26 and implementation thereto or AR 710-2, as applicable.

5.2.4.11. Special Instructions. Ammunition and explosives will be stored in accordance with the applicable safety regulations and storage drawings. Additional instructions concerning the storage of ammunition and explosives are as follows:

5.2.4.11.1. Small arms ammunition. Grade 3 or unserviceable small arms ammunition should remain in special locked storage sites in accordance with the provisions of paragraph *5.2.3.2.3.*

5.2.4.11.2. Storage of packing material and dunnage. Returned packing material will be kept in covered storage. Wooden boxes and metal shipping containers will be inspected in accordance with surveillance standards prior to storage. Preferably packing material and dunnage will be stored on brick, stone, concrete, or wood flooring. Stack to permit free circulation of air and at the same time provide uniform and adequate support throughout. Stacks should not exceed 12 feet in width or 20 feet in height. All such material will be placed lengthwise and supported by crossmembers running the width of the stack at the ends and at necessary intervals to conform with the above. The crossmembers resting directly on the floor will be large enough to give the necessary support without bending. Crossmembers between layers of materiel will be 1 inch thick, not over 4 inches wide, and will be placed directly above each lower member.

5.2.4.11.3. Care of reusable containers. Guided missile ammunition containers and large rocket metal containers are designed for reuse and will be carefully handled to minimize denting or distortion. Guided missile ammunition and large rockets received in wooden containers will be treated as follows: Containers showing evidence of moisture on the surface, whether mildewed or not, will be stored on dunnage so that all surfaces are exposed to the air. Boxes without cleats will be stored on 1-inch x by 2-inch dunnage between layers. Magazines in which moist containers are stored will be kept well ventilated.

5.2.4.11.4. Strapping for all ammunition. The strapping of ammunition boxes, whether for storage or shipment, will conform to specification QQ-781 strapping, flat, steel, type 1 or 4, Class A or B, in that order of preference. In emergency situations where the above strapping is not available, round wire strapping may be applied on individual boxes except for US Army Missile Command controlled items. The size of the strapping will conform to requirements specified in applicable package drawings. Only flat strapping will be used when palletizing or unitizing boxed ammunition or when palletizing separate loading projectiles. Class C strapping may be used for load tiedowns on ammunition shipments.

5.2.4.11.4.1. All lock corner boxes must be reinforced with two flat steel straps, type 1 or 4, Class B, 3/8 by .015 inch. One strap will be placed around the girth of the box and the other placed lengthwise around box.

5.2.4.11.4.2. Oversea shipments of bulk high explosives in wooden boxes will be strapped as follows: All boxes without cleats will be secured by two steel straps around the body of the box and one strap of the same size and type applied lengthwise across the top and bottom. Boxes with cleats on top and ends will be strapped around the body only, using two steel straps. Strapping will be tensioned until it cuts into the edges of the box.

5.2.5. Receiving

5.2.5.1. Inspection. Upon receipt of ammunition shipments, whether carload, less than carload, truckload, or less than truckload, the vehicle(s) will be carefully opened and inspected for failure of bracing and damage to contents. In addition, the lading will be inspected for evidence of tampering and pilferage. Receipts which do not conform to requirements will be processed as follows:

5.2.5.2. Reporting of Improper Shipments. Detailed instructions are furnished in the following regulations:

5.2.5.2.1. Packaging and handling deficiencies will be reported on DD Form 6 in accordance with the procedures set forth in AR 700-58, Report of Packaging and Handling Deficiencies.

5.2.5.2.2. Transportation discrepancies will be reported on SF 361 in accordance with the procedures outlined in AR 55-38, Reporting of Transportation Discrepancies in Shipments.

5.2.5.3. Inspection of Motor Vehicles and Railcars. Inspection of incoming empty or loaded and outgoing loaded trucks and railcars will be in accordance with the provisions of AR 55-355.

5.2.6. Shipping and Outloading

5.2.6.1. Overseas Shipment. When it is known that an item is to be transported by military or commercial aircraft, packaging and packing will be in accordance with instructions and regulations for air shipments. (See AR 700-15 Preservation, Packaging, Packing and Marking of Items of Supply; TM 38-250, Packaging and Handling of Dangerous Materials for Transportation by Military Aircraft; DOD Regulation 4500.32R, MIL-STAMPS; and in addition CAB No. 82, Official Air Transport, Restricted Articles Tariff No. 6 for commercial aircraft.)

5.2.6.2. Marking. All shipments will be documented and marked in accordance with DOD Regulation 4500.32R and MIL-STD 129. Ammunition and explosives will not be offered or accepted for transportation by air unless the shipper has certified on DD Form 1387-2 (Special Handling Data/Certification) that the shipment complies with AFM 71-4/TM 38-250/NAVAIR 15-03-500/MCO P4030.19. Each pack in a shipment must have a DD Form 1387-2 with certification affixed. Markings required by Department of Transportation (DOT) regulations for transportation of explosives and dangerous articles will appear on each container.

5.2.6.3. DOT Special Permits. Authorized deviations from requirements of DOT regulations are issued in the form of Special Permits. These permits will remain in effect during the period specified by the permit. Request for issuance of new permits and renewal of existing permits will be addressed to the Commanding General, U.S. Army Ammunition Procurement and Supply Agency, ATTN: AMUAP-T, Joliet, Ill. 60436, or the Commanding General, U.S. Army Missile Command, ATTN: AMSMI-OT, Redstone Arsenal Ala. 35809, as appropriate. When DOT Special Permits are received, the Inventory Control Point (ICP) will forward them to installations concerned.

5.2.6.4. Stock Selection. Selection of stock and movement planning will be accomplished in accordance with existing regulations. The exact quantity contained on the material Release Order (MRO) will be selected according to stock number, location, priority, consignee, mode of shipment, and the date and time due in the packing activity. Storage activities will apply prescribed packaging and packing instructions based on the materiel issue priority designator in conjunction with the geographical destination as indicated on the MRO. Storage activities will perpetuate this information to assure compliance with the packing and packaging instructions.

5.2.6.5. Small Lot Disposition. Depots will take full advantage of the opportunity to dispose of small serviceable lots upon receipt of MRO's covering shipment of fixed, semi-fixed, and mortar ammunition for training use at installations or activities within the continental United States (other than Air Force, Navy, or ports of embarkation).

5.2.6.5.1. Minimum retention size of separate loading propelling charge lots is one charge and these charges may be issued in one-charge lots. All other types of ammunition may be issued to installations or activities within CONUS (other than Air Force, Navy, ports of embarkation, or holding ard reconsignment points), without regard to lot size. CONUS shipments of ammunition will be effected in multiples of even packing.

5.2.6.6. Shipments of Classified Ammunition. Shipments of classified material will be given the minimum protection indicated in AR 380-5, AR 380-55, AR 55-16, AR 55-203 and AR 55-355. When general and specific regulations are in conflict, the higher security standards will prevail. Regulations governing commodities requiring extraordinary security measures are contained in AR 55-203, AR 55-16, and AR 190-60.

5.2.6.7. Carloading Methods and Techniques, CONUS Shipments.

5.2.6.7.1. Shipments of ammunition by rail will be loaded and braced in accordance with applicable 19-48 series drawings. Where such drawings are not available, methods outlined in Bureau of Explosives Pamphlet No. 6, Explosives and other Dangerous Articles; No. 6A, Loaded Projectiles, Loaded Bombs, etcetera; and No. 6C, Method for Loading and Bracing Trailers and Less Than Trailer Shipments of Explosives and Other Dangerous Articles via Trailer-on Flat Car (TOFC), will be followed. All rail shipments of ammunition will conform to applicable regulations provided in AR 55-355.

5.2.6.7.2. Pamphlets 6, 6A, and 6C of the Bureau of Explosives, Association of American Railroads, have been initially distributed to the installations concerned. Order additional copies from Bureau of Explosives, Association of American Railroads, 2 Pennsylvania Plaza, New York, New York 10001.

5.2.6.7.3. Ammunition and explosives will be loaded in rail cars to insure the optimum degree of load tightness. To reduce to a minimum the variances in decisions between ammunition inspectors and railroad inspectors as to what constitutes a tight load, the following instructions will govern. All items will be loaded hand tight. Items will be loaded in cars so that there will be no lengthwise space permitting lengthwise movement. Free space across the car is permitted provided the total of such space does not exceed one-third the width of 1 container. When boxes have vertical cleats at ends and are positioned on their bases with length of boxes parallel to the length of the car, the total free space across the width of the car must not exceed the width of one of the cleats. After load bracing is completed, free space may occur. Such free space is permitted provided there is not more than one free space in any one lengthwise row of the top layer. This allows for the removal of an item without extensive effort.

5.2.6.7.4. Covering of metal floor plates in railroad cars. See Title 49 CFR Section 174.525(b)(9), for information relative to this requirement.

5.2.6.7.5 Extraneous marking of railroad cars. Rail cars loaded with ammunition or explosives will be free of extraneous markings or any marking which may be prejudicial to the security of the shipment. For rail car marking requirements, refer to Title 49 CFR parts 171–179.

5.2.6.7.6. For individual boxes of ammunition other than WP and PWP filled, center blocking and bracing as shown in sketch No. 1, Bureau of Explosives Pamphlet No. 6 is applicable for carloading. These methods may be used in lieu of similar methods shown on current approved drawings. Where the center space exceeds 20 inches, strut bracing of gates or bulkheads is required in lieu of the solid center fill as shown on the sketches. When using a solid center fill, approval is granted to load boxes lengthwise, crosswise, or on their sides, provided all boxes in the same row (that is, between ends of the car or end and bulkhead, or between bulkheads) are placed in the same position. The term "row" as used herein is in accordance with the description and sketch shown in terminology 5 of the above cited Bureau of Explosives Pamphlet. Side scabbing is required when space, after loading the width of the car, exceeds one third of the width of the narrowest box being loaded across the car.

5.2.6.8. Lumber and Dunnage Used in Shipments.

5.2.6.8.1. Lumber of the varieties and grades described below will be used for all ammunition loaded and braced in accordance with Army drawings, or in accordance with Bureau of Explosives Pamphlets No. 6, No. 6A, and No. 6C. The woods suitable for use in blocking, bracing, and staying shipments of ammunition are herein classified into four groups. Group 2 woods may be used with the 19–48 series drawings for motor carrier equipment and for closed rail cars, however, they may not be used on open top rail equipment. Woods other than those appearing in the four groups indicated below should not be used unless approval has been obtained from the Commander, AMC ATTN: AMCSU-BS, 5001 Eisenhower Avenue, Alexandria, VA 22304. Grades and corresponding grading activities of softwood lumber species for blocking and bracing of ammunition are as follows:

GROUP 1

Species	*Grade for 1"*	*Grade for 2" and up*	*Grading rule*
Hemlock, Western	Standard	Standard	WWPA
Fir, Douglas	Std/No. 3	Standard	WCLIB/WWPA
Spruce, Sitka	Standard	Standard	WCLIB
Larch, Western	No. 3	Standard	WWPA
Pine, Southern	No. 2	Special Dim	SPIB

GROUP 2

Species	*Grade for 1"*	*Grade for 2" and up*	*Grading rule*
Fir, Balsam Northern White	No. 3 Com/ No. 2	No. 2 Dim/ No. 2	NH & PMA/ NELMA
Pine, Lodgepole	No. 3	Standard	WWPA
Pine, Ponderosa	No. 3	Standard	WWPA
Pine, Idaho White	No. 3	Standard	WWPA
Pine, Sugar	No. 3	Standard	WWPA
Pine, Norway	No. 3 Com	No. 2 Dim	NELMA/NH & PMA
Pine, Jack	No. 3 Com	No. 2 Dim	NH & PMA
Pine, Northern White	No. 3	No. 2 Dim	NELMA/NH & PMA
Spruce, Engleman	No. 3	Standard	WWPA
Spruce, Eastern	No. 2	No. 2	NELMA
Spruce, Eastern	No. 3	No. 2 Dim	NH & PMA
Cedar, Western Red	Std/No. 3	Standard	WCLIB/WWPA
Hemlock, Eastern	Standard	Standard	NH & PMA
Redwood	Construction	Construction	RIS
Cypress	No. 2 Com	No. 2 Com	NHLA/SCMA
Fir, White	Std/No. 3	Standard	WCLIB/WWPA
Hemlock, West Coast	Standard	Standard	WCLIB

Species	Grade for 1"	Grade for 2" and up	Grading rule
		GROUP 3	
Ash, Black	Gum, Tupelo	Gum, Black	Sycamore
Elm, White	Maple, Soft	Gum, Red	Aspen, Bigtooth
		GROUP 4	
Ash, White	Hackberry	Birch	Maple, Hard
Beech	Hickory	Elm, Rock	Oak

5.2.6.8.2. Lumber will be surfaced on four sides (S4S), and the moisture content (MC) for 1-inch and 2-inch must not exceed 19 percent (dry). For 3-inch and upward the material used in the blocking and bracing of ammunition, and the construction of the skidded 4-way base, the moisture content must not exceed 26 percent.

5.2.6.8.3. Lumber procured under MM-L-736 (Lumber and Timber: Hardwood groups 3 and 4) will not be lower than No. 2 construction grade. This grading will be based on Rules for the Measurement and Inspection of Hardwood and Cypress Lumber by the National Hardwood Lumber Association.

5.2.6.8.4. The size of lumber shown in approved outloading drawings is in nominal dimensions. Wherever the outloading drawings for blocking and bracing specify dressed or surfaced lumber, rough or full dimension material may be used provided the size of the nails are increased proportionately. When Army drawings are not available, blocking and bracing must be done in accordance with Bureau of Explosive Pamphlets No. 6, No. 6A, and No. 6C, with an increase in the cross section of the lumber as specified in Bureau of Explosive Pamphlet No. 14.

5.2.6.9. Shipment by Motor Vehicle.

5.2.6.9.1. AR 55-355 requires vehicles transporting ammunition be equipped with two fire extinguishers. Vehicles that do not meet these requirements will be rejected, except that a vehicle with one fire extinguisher may be accepted, as a convenience to the Government, if the installation furnishes the necessary second fire extinguisher on a loan basis. The loan of the fire extinguisher will be with the provision that the carrier will take action to supply his own prior to release of the vehicle from the installation.

5.2.6.9.2. In addition to checking for information required on DD Form 626, the following inspection will be made of fire extinguishers mounted on commercial carrier equipment:

5.2.6.9.3. Check the nozzle for signs of stoppage or leakage. (If in doubt, operate the fire extinguisher.)

5.2.6.9.4. Check for mechanical damage, corrosion, and other unsatisfactory (deteriorated) conditions.

5.2.6.9.5. Check for fullness of the 1- and 1½-quart carbon tetrachloride types by shaking the extinguisher.

5.2.6.9.6. Check for pressure of 1-gallon and 3½-gallon carbon tetrachloride types. Check contents by sight gage, tilting the extinguisher to move the liquid against the glass.

5.2.6.9.7. Truck inspections should be made with discretion. Only those trucks and/or trailers which have deficiencies that cannot be corrected immediately should be rejected. Before any motor vehicle designated for movement over public highways may be loaded with dangerous articles, as defined by DOT regulations, the vehicle must be inspected and approved by a qualified inspector for compliance with AR 55-355.

5.2.6.9.8. Motor shipments will be loaded and braced in accordance with 19-48 series drawings.

CHAPTER 5

STORAGE OF SPECIAL COMMODITIES

Section IV. HAZARDOUS COMMODITIES

	Paragraph	Page
Purpose	5.4.1	54-1
General	5.4.2	54-1
Storage category groups	5.4.3	54-2
APPENDIX A. Items of protective equipment		54-3
B. Hazardous general chemicals		54-5

5.4.1. Purpose

This section provides information and examples related to hazardous general chemicals currently stored in military installations. The section is intended to implement section IV, chapter 5, TM 743-200.

5.4.2. General

5.4.2.1. No attempt has been made to provide storage and handling information on ammunition, toxicological agents, chemical warfare agents, radioactive materials, or compressed gases, as these are adequately covered in other Department of the Army publications. The storage requirements reflected under the heading "Type of Storage" are intended to apply to bulk quantities only and do not apply to small quantities contained in bottles or vials within such areas as laboratories and small stock rooms. Further, the information on hazardous properties and protective measures is primarily applicable to storage operations and is not, in all instances, appropriate for operations involving the actual use of the items listed. A great difference in chemical properties and hazards sometimes exists between the solid and liquid forms of some hazardous items. Knowledge of specific hazards and the necessary precautions is a must for personnel responsible for storing and handling hazardous chemicals.

5.4.2.2. Containers of chemical products must be handled with caution to prevent damage. This handling care will reduce the need for spillage removal and related problems. In the event of spillage, however, the following guidance is furnished:

5.4.2.2.1. Spills of certain acid solutions listed in appendix B should be neutralized with calcium hydroxide (sometimes called slaked lime or calcium hydrate). For cleaning acid from equipment, a 10 to 20 percent sodium carbonate solution should be used. For washing floors, a 10 percent sodium bicarbonate solution is satisfactory. Acids give off heat when neutralized so care must be exercised where large quantities of an acid spill are involved. The spill residues should then be flushed away with water or scraped up and removed for disposal.

5.4.2.2.2. Spills of other acid solutions and other type liquid chemicals as well as solid materials may be handled as prescribed in the storage and handling column of appendix B.

5.4.2.2.3. All leaking containers must be removed from the storage area and contents repackaged or disposed of.

5.4.2.2.4. Consult local safety officer for proper procedures when material in damaged containers or material in residues removed from spill areas requires disposal.

5.4.2.3. Water may be ineffective in fighting fires of liquids with low flash points. This precautionary wording is used in the firefighting phase column of appendix B for materials having a flash point below 100°F. Obviously, the lower the flash point, the less effective water will be. The phrase "water may be ineffective" is to indicate that although water can be used to cool and protect exposed material, it may not extinguish the fire. When used on fires of liquids with low flash points, the water must be used in the form of a spray.

5.4.2.4. Appendix B does not constitute a complete list of items classed as hazardous general chemicals; however, additional information on any item contained herein, or any other chemical item stored, may be obtained from the appropriate accountable supply distribution activity. Detailed data are also referenced in the following publications:

5.4.2.4.1. TM 3-250, Storage, Shipment, and Handling of Chemical Agents and Hazardous Chemicals.

5.4.2.4.2. TM 38-250, Packaging and Handling of Dangerous Materials For Transportation by Military Aircraft.

5.4.2.4.3. TB CML 50, Chemical and Chemical Products.

5.4.2.4.4. Fire Protection Guide on Hazardous Materials by National Fire Protection Association.

5.4.2.4.5. Handbook of Dangerous Materials by N. Irving Sax, Reinhold Publishing Co., New York, N.Y.

5.4.2.4.6. Condensed Chemical Dictionary, Reinhold Publishing Co., New York, N.Y.

5.4.2.4.7. T.C. George's Tariff, Department of Transportation (DOT) Regulations and supplements thereto.

5.4.2.5. Items of protective equipment, for use by personnel engaged in the handling of hazardous chemicals are listed in appendix A.

5.4.3. Storage Category Groups

5.4.3.1. Storage category group 1 generally contains the strong mineral acids, flammable liquids, highly corrosive liquids, and explosive materials.

5.4.3.2. Storage category group 2 is comprised principally of chemicals which are strong oxidizing agents.

5.4.3.3. Storage category group 3 consists of materials which are readily oxidizable and poisonous or toxic materials.

5.4.3.4. Chemicals within each of the above groups may be stored together consistent with the following guidelines:

5.4.3.4.1. Completely isolate ammonium nitrate, carbon disulfide, and calcium carbide from each other and from any other chemical by storage in detached facilities.

5.4.3.4.2. Keep all flammables away from oxidizing chemicals. Separate by a fire wall or by storage in a different building.

5.4.3.4.3. Highly flammable materials (flash points 100° F. or less) should be stored in a separate fire-resistant inclosure or building away from flammable materials of higher (over 100° F.) flash points. Where such separate facilities are not available, the highly flammables should be segregated as far from other flammable stocks as space permits.

5.4.3.4.4. Keep corrosive acids away from material which might be corroded or otherwise damaged by a leaking container.

5.4.3.4.5. Separate oxidizable material from oxidizing agents in a separate bay or building when possible. If not feasible to do so, separate by as much space as practical within the storage building.

5.4.3.4.6. Keep chemicals which are sensitive to water or steam away from exposure to such sources.

5.4.3.4.7. Keep chemicals out of direct rays of the sun to minimize possibilities of reactions due to heat.

5.4.3.4.8. Read labels on containers and adhere to any special instructions thereon.

APPENDIX A
ITEMS OF PROTECTIVE EQUIPMENT

Type	*Item description*
A	Chemical safety goggles.
B	Plastic face shield.
C	Rubber gloves.
D	Rubber aprons.
E	Rubber shoes or boots.
F	Safety hat.
G	Respiratory protection: (Consult local safety officer for assistance in selection of approved types.)
(1)	Gas mask.
(2)	Air-line respirator.
(3)	Hose mask with inlet to hose in a vapor free atmosphere.
(4)	Respirator.
H	Cup goggle, individual right and left plastic eyecups. Rubber bound indirect ventilation, adjustable fixed bridge; clear case hardened lenses, all rubber headband.
I	Cup goggle, individual right and left eyecup. Rubber bound, hinged bridge. Plastic lenses at least .060 inch thick. All rubber headband.
J	Rubber frame goggle. Indirect ventilation. Single plastic lens at least .060 inch thick. All rubber headband.
K	Rubber frame gas-proof goggle. Eyecups of the nod and shake design. Casehardened glass lenses. All rubber headband.
L	Acid hood plastic. Clear plastic window at least .060 inch thick.
M	Plastic face shield. Design should have long front and deep sides. Material should be at least .060 inch thick.
N	Protective clothing.

APPENDIX B

HAZARDOUS GENERAL CHEMICALS ▮

Nomenclature	Hazardous properties	Storage and handling*	Storage category group	Type of storage			Fire fighting phase
				Warehouse		Shed	
				Flammable	Unheated		
Acetic Acid	Oxidizable material. Caustic, irritating, can cause burns. Flash point 109° F. Moderate fire hazard.	Store in heated or unheated warehouse depending on local climatic conditions. Material must be maintained at above 62° F. temperature. Separate from oxidizing materials. Handle spills as per para 5.4.2.2.1. Personnel exposed to great quantities of this material should wear protective clothing of types A, C, D, E, and G(2).	3	----	X	----	Water (fog or spray), carbon dioxide, or dry chemical may be used effectively.
Acetone	Flammable liquid, constitutes dangerous fire hazard. Flash point 0° F. Respiratory, eye and skin irritant.	Store in a cool place away from sources of ignition. Absorb spills with a noncombustible sweeping compound and remove this waste for disposal. Personnel exposed to high vapor concentrations should wear type A and G(1) protective equipment.	1	X	----	----	Water spray, carbon dioxide, or dry chemical may be used. (Water may be ineffective.)
Alcohol Denatured.	Flammable liquid, dangerous fire hazard. Highly poisonous by ingestion or absorption. Avoid fumes. Flash point 57° F.	Store in cool, ventilated place away from areas of fire hazard. Flush spills away with water. Personnel exposed to this material should wear protective equipment types A and B, and if high or unknown concentrations are present, type G(1).	1	X	----	----	Dry chemical, carbon dioxide or large volumes of water are effective extinquishing agents.
Ammonium Hydroxide.	Slight fire hazard. Oxidizable material. Vapors are extremely irritating to eyes, skin, and mucous membranes of the nose. Liquid causes burns.	Store in cool, ventilated area away from heat and sunlight. Neutralize spills with a 5 percent acetic acid solution. Wash residue away with water or scrape up residue and remove for disposal. Personnel engaged in this work should wear protective equipment of type G(1).	3	----	X	----	Water is an effective fire extinguishing agent.

See footnotes at end of table.

Nomenclature	Hazardous properties	Storage and handling*	Storage category group	Type of storage			Fire fighting phase
				Warehouse		Shed	
				Flammable	Unheated		
Ammonium Nitrate.	Oxidizing material. Explosive and dangerous fire hazard.	Store isolated from other buildings and other materials. Sweep up spills and destroy by burning at an isolated location.	2	----	----	X	Apply large volumes of water in early stages of fire. Do not inclose burning fires of nitrate as it will explode. Solid hose streams of water enable the fire to be fought from a greater distance, but introduce the hazard of steam explosion, particularly if the nitrate is molten; therefore, the hose streams should be directed from behind a protective barrier. Wear a self-contained breathing apparatus.
Ammonium Persulfate.	Moderate fire hazard by chemical reaction with reducing agents. Powerful oxidizer.	Store in a cool, well ventilated area away from open flames, organic and other oxidizable materials. Sweep up and remove spills for disposal.	2	----	X	----	Carbon dioxide, dry chemical or water can be used.
Amyl Acetate..	Flammable and dangerous fire hazard. The liquid is dangerous to the eyes and is a respiratory irritant. Flash point 77° F.	Store in a cool place away from fire hazards. Absorb spills with a noncombustible sweeping compound and remove this waste for disposal. Personnel exposed to this material should wear protective equipment of types A, C, D, E and G(1) if vapors are present.	1	----	----	X	Carbon dioxide or dry chemical may be used. (Water spray may be used but may be ineffective.)
Aniline-------	Flammable, moderate fire hazard. Poisonous when absorbed through the skin as well as by inhalation of vapors and dust. Flash point 158° F.	Store in cool, ventilated place away from areas of acute fire hazard. Absorb spills with a noncombustible sweeping compound and remove this waste for disposal. Protective clothing of types A, C, D, E and where necessary type G(1) should be worn.	3	----	----	X	Carbon dioxide, water spray or fog, and dry chemical are effective extinguishing agents.
Benzene------	Oxidizable material. Flammable, dangerous fire hazard. The results of inhalation of toxic quantities of the vapor are both acute and chronic, depending upon the concentration of the vapor and the length of exposure. Flash point 12° F.	Store in a cool place, away from areas of any fire hazard. Separate from oxidizing materials. Absorb spills with a noncombustible sweeping compound and remove this waste for disposal.	1	X	----	----	Carbon dioxide, water spray, and dry chemical may be used. (Water may be ineffective.) Wear self-contained breathing apparatus.
Benzoic Acid..	Slight fire hazard. Oxidizable material. Flash point 250° F.	Store in a cool, ventilated place, away from areas of acute fire hazard. Separate from oxidizing agents. Sweep up and remove spills for disposal.	3	----	X	----	Water (fog or spray), carbon dioxide, and dry chemical are effective extinguishing agents.

See footnotes at end of table.

Nomenclature	Hazardous properties	Storage and handling*	Storage category group	Type of storage			Fire fighting phase
				Warehouse		Shed	
				Flammable	Unheated		
Bromine	Moderate fire hazard. Strong oxidizing agent and may cause fire when in contact with combustible material. Corrosive. Causes severe burns. Do not breathe vapors.	Protect against damage to container. Store in cool place away from acute fire hazards. Separate from organic or easily oxidizable material. Neutralize spills with ammonia water and flush away residue with large quantities of water or scrape up residue and remove for disposal. For eye protection from vapor, use protective equipment types K, L, for protection against liquid K, L, and M.	2	----	X	----	Water spray may be used effectively. Protective masks must be worn.
Butyl Acetate	Moderate fire hazard. Irritant when present in small quantities. More serious effects when present in increased quantities over prolonged period. Flash point 66° F.	Store in cool, ventilated place away from areas of acute fire hazard. Absorb spills with a noncombustible sweeping compound and remove this waste for disposal.	1	----	----	X	Carbon dioxide, water spray, or dry chemical may be used to advantage. (Water may not be effective.)
Butyl Alcohol	Dangerous fire hazard. Skin and respiratory irritant. Flash point 82° F.	Store in a cool, ventilated area away from acute fire hazards and away from sources of ignition or high temperatures. Flush spills away with water. Personnel exposed to concentrations in excess of 25 ppm should wear protective equipment of types A, G(4) and N where required to prevent skin contact.	3	----	----	X	Carbon dioxide and dry chemical may be used. Avoid use of water.
Calcium Carbide.	Not flammable in dry state but produces acetylene gas on contact with water. Dust is an eye and respiratory irritant and can cause skin burns. Moderate fire hazard.	Store in dry, noncombustible, well ventilated place without sprinkler protection. Protect from moisture. Isolate from other materials and buildings. Sweep up and remove spills for disposal.	1	----	----	X	Smother with suitable dry powder.
Calcium Hypochlorite.	Moderate fire hazard. Oxidizing material. May ignite or explode when in contact with oils and greases particularly chlorinated hydrocarbons. Material is dangerous to the eyes and has a strong caustic action on the skin.	Store in a cool, dry area. Store separated from oils, greases, lubricants and chlorinated hydrocarbons (e.g. insecticides and degreasers). Sweep up and remove spills for disposal. Personnel exposed to this material should wear type A protective equipment.	2	----	X	----	Water preferably in the form of spray.

See footnotes at end of table.

Nomenclature	Hazardous properties	Storage and handling*	Storage category group	Type of storage: Warehouse, Flammable	Type of storage: Warehouse, Unheated	Type of storage: Shed	Fire fighting phase
Carbon Disulfide.	Highly flammable and explosive. Flash point −22° F. Toxic and may cause dangerous illness in ¼ to 1 hour. Avoid contact with skin or inhalation of vapors.	Safeguard against physical damage and metallic blows. Store isolated from other buildings, materials and sources of ignition such as electric lighting fixtures and other electrical equipment. Keep away from sunlight. Store in bulk quantities under water. Spray in hot weather if in drums. Protective equipment types C, E, G(1), and G(2) should be worn in case of accident or spillage.	1	----	----	X	Carbon dioxide and dry chemical may be used effectively. Cooling and blanketing with water spray is effective in fires in metal container or tanks.
Carbon Tetrachloride.	Toxic by inhalation, contact with skin or ingestion. Avoid use in confined areas.	Store in cool, ventilated area. Containers to be kept closed and properly labeled to insure caution in handling. Absorb spills with a noncombustible sweeping compound and remove this waste for disposal. Personnel exposed to this material should wear types A, C, and G(2) protective equipment.	3	----	X	----	Not applicable.
Charcoal, Activated.	Flammable solid. Potential danger exists from carbon monoxide poisoning during burning.	Store in a cool dry area away from sources of ignition. Separate from oxidizing agents. Sweep up and remove spills for disposal.	1	X	----	----	Water spray is effective in controlling fires of this material.
Chlorobenzene.	Flammable liquid. Toxic by inhalation or skin contact. Also an eye irritant. Dangerous fire hazard. Flash point 84° F.	Protect containers against damage. Absorb spills with a noncombustible sweeping compound and remove this waste for disposal. Personnel wear types A, C and G(2) protective equipment.	1	X	----	----	Use water spray, carbon dioxide, or dry chemical. (Water may be ineffective.)
Chlorinated Lime [1]	--------------------	--------------------	2	----	X	----	
Chloroform.	Nonflammable. Causes paralysis followed by respiratory failure upon prolonged inhalation. Maximum allowable concentration in air is 100 ppm. Slight fire hazard.	Protect against physical damage to containers. Store in well ventilated area. Absorb spill with a noncombustible sweeping compound and remove this waste for disposal. Exposed personnel should wear protective equipment of type G(2) and must not be permitted to inhale vapors or fumes.	3	----	X	----	Not applicable.
Chlorosulfonic Acid.	Nonflammable but a strong oxidizing agent. Very reactive in the presence of moisture. Capable of producing severe burns. Very corrosive.	Separate from combustible materials. Drums should be stored with plugs up. Handle spills as per para 5.4.2.2.1. Check with local safety officer on protective clothing.	1	----	X	----	Not applicable.

See footnotes at end of table.

Nomenclature	Hazardous properties	Storage and handling*	Storage category group	Type of storage			Fire fighting phase
				Warehouse		Shed	
				Flammable	Unheated		
Chromium Trioxide.	Dangerous fire hazard. Powerful oxidizing agent. When ignited burns with great intensity. May cause explosion in fire. Poisonous. Skin and nose irritant. Can cause severe burns.	Store in cool place. Keep away from acute fire hazard, reducing agents, and organic material. Sweep up and remove spills for disposal. Contact local safety officer for disposal procedures for this chemical. Personnel exposed to this material should protect eyes with types I, J, and L protective equipment. Protect skin with types C and N.	2	----	----	X	Use water, completely extinguishing the fire, after which the storage pile should be moved.
Creosote, Technical	Poisonous. May cause skin irritation. Moderate fire hazard. Flash point 165° F.	Protect against mechanical damage to container. Store in well ventilated area. Absorb spills with a noncombustible sweeping compound and remove this waste for disposal. Personnel exposed to this material should wear protective equipment of types A, G(4), and N.	3	----	X	----	Dry chemical, water spray, or carbon dioxide are effective.
Cresylic Acid..	Liquid and vapors constitute a moderate fire hazard. Toxic by inhalation or skin absorption. Flash point 178° F.	Store in cool, ventilated area. Absorb spills with a noncombustible sweeping compound and remove this waste for disposal. Eye protection, type A.	3	----	X	----	Water (fog or spray), carbon dioxide, and dry chemical may be used.
Ethyl Acetate.	Flammable liquid. Dangerous when exposed to high heat or flame. Extremely irritating to eyes, nose, and throat. Flash point 24° F.	Store away from areas of acute fire hazard. Absorb spills with a noncombustible sweeping compound and remove this waste for disposal.	1	X	----	----	Water spray, dry chemical, or carbon dioxide. (Water may be ineffective.)
Ethyl Alcohol.	Flammable liquid. Flash point 55° F. Dangerous fire hazard. Heavy concentrations of vapor can cause headache, irritation of eyes, nose, throat, and drowsiness.	Store in cool place away from areas of acute fire hazard or open flames. Keep containers tightly closed. Flush spills away with water.	1	X	----	----	Carbon dioxide, water spray, and dry chemical may be used. (Water may be ineffective.)
Ethyl Ether...	Extremely volatile and flammable. May explode when mixed with air or when heated to high temperatures. Inhalation of fumes may cause serious respiratory failure. Flash point −49° F. Dangerous fire hazard.	Store in cool ventilated place away from acute fire hazards. Absorb spills with a noncombustible sweeping compound and remove this waste for disposal. Personnel should wear the following protective equipment: types A and G and, if applicable, types D, E, and F.	1	X	----	----	Water may be used to keep containers cool during a fire; however, to fight a fire involving ether, carbon dioxide (gas or foam) or dry chemical should be used.
Ethylene Chloride.	Flammable liquid. Dangerous when exposed to high heat or flame. Toxic by inhalation or skin contact. Eye irritant. Flash point 70° F.	Protect container against damage. Absorb spills with a noncombustible sweeping compound remove this waste for disposal. Check with local safety officer on protective clothing.	1	X	----	----	Water spray, carbon dioxide, or dry chemical. (Water may be ineffective.)

See footnotes at end of table.

Nomenclature	Hazardous properties	Storage and handling*	Storage category group	Type of storage			Fire fighting phase
				Warehouse		Shed	
				Flammable	Unheated		
Ethylene Glycol.	Poisonous if taken internally. Irritating to eyes. Slight fire hazard when exposed to heat or flame. Flash point 232° F.	Store in a cool dry place. Flush spills away with water.	3	----	X	----	Carbon dioxide, water, or dry chemical may be used. (Water may cause frothing.)
Formaldehyde.	Moderate fire hazard. Minor irritant to upper respiratory tract. Flash point 200° F.	Separate from oxidizing material. Store in cool place away from areas of acute fire hazard. Absorb spills with a combustible sweeping compound and remove this waste for disposal. Personnel exposed to the material should wear types C, K, and G(1) protective equipment.	3	----	X	----	Carbon dioxide, water spray, or dry chemical may be used.
Formic Acid...	Moderate fire hazard; gives off flammable vapors which may form explosive mixtures with air. Corrosive; has caustic effect on skin. Oxidizable material. Flash point 156° F.	Store in a cool place away from areas of acute fire hazard out of direct rays of sun. Separate from powerful oxidizing agents. Handle spills as per para 5.4.2.-2.1. Personnel should wear types K, L, and M protective equipment for eye protection and if required, types A and G(4) for additional protection.	3	----	X	----	Water (fog or spray), carbon dioxide and dry chemical may be used.
Glycerol......	Oxidizable material. Combustible liquid and a slight fire hazard. Flash point 320° F.	Store in cool place away from areas of acute fire hazard. Separate from oxidizing agents and acids. Flush spills away with water. Personnel exposed to large quantities of this material should wear type A protection.	3	----	X	----	Water (fog or spray), carbon dioxide and dry chemical may be used.
Heptane......	Flammable liquid. Dangerous fire hazard when exposed to high heat or flame. Flash point 25° F.	Protect container against damage. Absorb spills with a noncombustible sweeping compound and remove this waste for disposal. Personnel exposed to the material should wear types C, K, and G(1) protective equipment.	1	X	----	----	Water spray, carbon dioxide, or dry chemical. (Water may be ineffective.)
Hexane......	Dangerous fire hazard. Flammable liquid. Vapor can form explosive mixture with air. Flash point −7° F.	Protect container against damage. Absorb spills with a noncombustible sweeping compound and remove this waste for disposal.	1	X	----	----	Carbon dioxide, dry chemical, or water spray. (Water may be ineffective.)
Hydrochloric acid.	Oxidizable material. Not combustible in air, but if allowed to come in contact with common metals, hydrogen is evolved which may form explosive mixtures with air. Aqueous solution is corrosive, irritating, and poisonous. Fumes are corrosive. Fumes are also irritating to mucous membranes.	Safeguard containers from physical damage. Separate, from oxidizing agents, particularly nitric acid and chlorates. Avoid contact by leakage or otherwise with all common metals. Handle spills as per para 5.4.2.2.1. Personnel exposed to this material should wear types A, G(4), and M protective equipment; types K, L, and M for eye protection; type M against liquid and types K and L for vapor protection.	1	----	X	----	Use water or neutralize with chemically basic substances such as soda ash or slaked lime.

See footnotes at end of table.

Nomenclature	Hazardous properties	Storage and handling*	Storage category group	Type of storage			Fire fighting phase
				Warehouse		Shed	
				Flammable	Unheated		
Hydrofluoric acid.	Not combustible. Acid and its vapors highly toxic and extremely dangerous to skin, eyes and respiratory tract.	Store in a cool, ventilated place away from areas of acute fire hazard and out of direct rays of the sun. This acid requires isolated storage since contact with metals and chemicals such as ammonia, toxic fumes or compounds are formed. Safeguard containers against physical damage. Handle spills as per para 5.4.2.2.1. Personnel handling this material should wear types A, B, C, and G(2) protective equipment.	1	----	----	X	Large volumes of water may be used. Use oxygen helmet, of approved type, on entering atmosphere known to contain hydrofluoric acid vapors.
Hydrogen Peroxide (applies to solution 27% and above).	Strong oxidizing liquid. May cause ignition of combustible material if left standing in contact with it. Dangerous fire hazard. Dangerous to eyes.	Store in cool place away from areas of acute fire hazard. Flush spills away with water. Personnel exposed to vapor or mist should wear types A and G(4) equipment.	2	----	X	----	Use water.
Iodine	Poisonous and corrosive liquid solution or solid. Oxidizing agent. Iodine is incombustible but emits highly toxic fumes when heated.	Store in a cool dry place away from direct sunlight and areas of acute fire hazards. Sweep up and remove solid spills for disposal. Flush liquid solution spills away with water. Rubber gloves and apron, goggles, face shield and respiratory protection required.	2	----	X	----	Not applicable.
Isopropyl Alcohol.	Volatile, flammable, dangerous fire hazard. Flash point 53° F. Irritating to skin, eyes, and throat.	Store in cool place away from areas of acute fire hazard. Flush spills away with water. As protection for the eyes type A equipment should be worn. For inhalation use type G(4) equipment. Containers to be kept closed and properly labeled.	1	X	----	----	Carbon dioxide, water spray or dry chemical may be used. (Water may be ineffective.)
Methanol	Volatile flammable liquid. A dangerous fire hazard. Poisonous; ingestion or absorption of methanol causes central nervous system damage, particularly of the optic nerve. Avoid inhalation of of fumes. Flash point 52° F.	Store in cool, ventilated area away from acute fire hazard areas. Flush spills away with water.	1	X	----	----	Dry chemical, carbon dioxide or large quantities of water may be used. (Water may be ineffective.)
Methyl Ethyl Ketone.	Volatile flammable liquid. Dangerous fire hazard. Oxidizable material. Flash point 21° F.	Safeguard against damage to containers. Store in a cool place away from areas of acute fire hazard. Separate from oxidizing materials. Absorb spills with a noncombustible sweeping compound and remove this waste for disposal. Personnel exposed to high concentrations should wear types A and G(4) protective equipment.	1	X	----	----	Carbon dioxide, water spray, and dry chemical may be used. (Water may be ineffective.)

See footnotes at end of table.

Nomenclature	Hazardous properties	Storage and handling*	Storage category group	Type of storage			Fire fighting phase
				Warehouse		Shed	
				Flammable	Unheated		
Methyl Isobutyl Ketone.	Flammable liquid. Irritating to eyes and nose. Flash point 75° F.	Protect container against damage. Absorb spills with a noncombustible sweeping compound and remove this waste for disposal. Personnel exposed to high concentrations should wear types A and G(4) protective equipment.	1	X	----	----	Water spray, carbon dioxide, or dry chemical. (Water may be ineffective.)
Napthalene	Dust in high concentrations forms moderate explosive hazard with air. Also, gives off flammable vapors when heated. Flash point 174° F. Irritant effect on the skin. Hot vapors produce itching, pain, and eczema. Oxidizable material.	Store in cool place away from areas of acute fire hazard. Separate from oxidizing agents. Sweep up and remove spills for disposal.	3	----	X	----	Water (fog or spray), carbon dioxide, or dry chemical may be used effectively.
Nickel Sulfate, Hexahydrate.	Noncombustible. Avoid contact with skin.	Store in a cool, dry place. Sweep up and remove spills for disposal.	3	----	X	----	Not applicable.
Nitric Acid	Oxidizing material. A highly corrosive fuming liquid and very dangerous to the eyes and skin. In contact with organic materials or other easily oxidizable materials it may cause fires or explosions.	Store carefully to avoid damage to containers. Store in cool place away from areas of acute fire hazard. Separate from oxidizable and organic materials. Avoid direct sunlight. Handle spills as per para 5.4.2.2.1. Personnel exposed to this material should wear protective equipment of types A, B, C, and N.	1	----	----	X	Use water spray.
Oleic Acid	Oxidizable material. A combustible liquid and a slight fire hazard. Flash point 372° F.	Store in a cool place away from areas of acute fire hazard. Separate from oxidizing agents. Absorb spills with a noncombustible sweeping compound and remove this waste for disposal.	3	----	X	----	Water (fog or spray), foam, carbon dioxide or dry chemical may be used.
Oxalic Acid	Oxidizable material. Has strong, local caustic action on the skin and mucous membranes.	Store in cool dry place. Separate from oxidizing material. Sweep up and remove spills for disposal. Personnel exposed to this material should use protective clothing of types A, C, G(4), and N. Containers to be kept closed and properly labeled.	3	----	X	----	Not applicable.
Pentane	Flammable liquid. Dangerous when exposed to high heat or flame. Flash point −40° F.	Protect container against damage. Keep away from sparks or open flame. Absorb spills with a noncombustible sweeping compound and remove this waste for disposal.	1	X	----	----	Carbon dioxide, dry chemical, or water spray. (Water may be ineffective.)

Nomenclature	Hazardous properties	Storage and handling*	Storage category group	Type of storage			Fire fighting phase
				Warehouse		Shed	
				Flammable	Unheated		
Perchloric Acid, 70%.	Oxidizing material. When combined with organic or other easily oxidizable materials forms highly unstable perchlorates or causes these materials to ignite which in turn may cause fires or explosion. A corrosive liquid which can cause irritation and burns of the skin, eyes, and mucous membranes of the skin.	Store in a cool, ventilated area, away from acute fire hazards. Separate from oxidizable materials. Protect against physical damage in storage. Flush spills with water. Personnel who work where fumes are apt to occur should wear adequate protective gear; i.e., chemical safety goggles, respirator and protective clothing.	2	----	X	----	Fires may be controlled by water spray.
Petroleum Ether.	Volatile flammable liquid and dangerous fire hazard. Flash point −50° F. Mild narcotic. Oxidizable material.	Safeguard containers against mechanical injury. Store in cool, ventilated area away from acute fire hazards. Separate from oxidizing materials. Absorb spills with a noncombustible sweeping compound and remove this waste for disposal. Personnel exposed to high or unknown concentrations should wear type G(4) protective equipment.	1	----	----	X	Foam, carbon dioxide, and dry chemical may be used to advantage. Avoid use of water.
Phenol	Moderate fire hazard. Oxidizable material. Yields flammable vapors when heated. The liquid or vapors are poisonous and very corrosive to the skin, and are readily absorbed through the skin and mucous membranes. Flash point 175° F.	Safeguard containers against damage. Store in a cool, ventilated area away from acute fire hazards. Separate from oxidizing agents. Sweep up solid spills and remove for disposal. Absorb spills of liquid solutions with a noncombustible sweeping compound and remove this waste for disposal. Personnel exposed to the material should wear adequate safety equipment of types C, D, E, and G(2).	3	----	X	----	Water (high volume), carbon dioxide, or dry chemical are effective.
Polyvinyl Alcohol.	Slight fire hazard. Nontoxic. Flash point 175° F.	Store in a cool, dry place. Sweep up solid spills and remove for disposal. Flush liquid solution spills away with water.	3	----	X	----	Water may be used.
Potassium Chlorate.	A powerful oxidizing agent and a moderate fire and explosion hazard. Poisonous and fumes are toxic.	Store in a cool, dry, well ventilated area away from acute fire hazards. Separate from organic or other easily oxidizable materials. Sweep up and remove spills for disposal. Personnel exposed to this material should wear types A and G(4) protective equipment.	2	----	----	X	Flood with water.

Nomenclature	Hazardous properties	Storage and handling*	Storage category group	Type of storage: Warehouse: Flammable	Type of storage: Warehouse: Unheated	Type of storage: Shed	Fire fighting phase
Potassium Cyanide.	Oxidizable material. Cyanide is not flammable, but evolves flammable hydrogen cyanide gas on contact with acids or moisture. Vapors are poisonous, will cause nasal irritation and are very dangerous to eyes.	Store in cool, dry place away from areas of acute fire hazard. Separate from acids and oxidizing agents. Spills should be swept up, taken outside and mixed with a calcium hypochlorite slurry. This same type slurry can be used to wash any residue remaining on the floor. Caution must be exercised when using this slurry as it generates heat and objectionable fumes. Personnel exposed to this material should wear types A and C protective equipment. Containers to be kept closed and properly labeled.	3	----	----	X	Avoid water in fighting fires of this type.
Potassium Dichromate.	Moderate fire hazard. Oxidizing agent.	Store in cool, ventilated area. Separate from organic or other easily oxidizable materials. Sweep up and remove spills for disposal. Personnel exposed to the material should wear protective clothing of types B, C, D, G(4), and N, where required.	2	----	X	----	Flood with water.
Potassium Hydroxide.	This material is very caustic and corrosive in both solid and liquid forms. Moderate fire hazard.	Store in cool, dry, ventilated place. Sweep up and remove solid spills for disposal. Neutralize liquid solution spills with a 5 percent acetic acid solution and flush with water. Personnel required to work with this material should wear adequate protective clothing and equipment of types A, B, C, D, G(4) and M, and for eye protection types G, I, or K, L and M can be used.	1	----	X	----	Flood with water.
Potassium Nitrate.	Powerful oxidizing agent and a moderate fire and explosive hazard.	Safeguard containers against damage. Store in a cool place. Separate from organic or other easily oxidizable material. Do not store in confined area. Sweep up and remove spills for disposal.	2	----	----	X	May be controlled with water (flooding).
Potassium Oxalate.[3]	------------------------	Sweep up and remove spills for disposal.	3	----	X	----	
Potassium Permanganate.	Powerful oxidizing material. Moderate fire and explosion hazard by reaction with combustibles.	Store in a cool, ventilated place. Separate from organic and other easily oxidized materials. Sweep up and remove solid spills for disposal. Flush away liquid solution spills with water.	2	----	----	X	Water may be used effectively.
Potassium Persulfate.	Oxidizing material. Moderate fire hazard. May cause skin irritation.	Store in a cool, dry place. Separate from organic and other easily oxidized materials. Sweep up and remove spills for disposal.	2	----	X	----	Water may be used effectively.

See footnotes at end of table.

Nomenclature	Hazardous properties	Storage and handling*	Storage category group	Type of storage			Fire fighting phase
				Warehouse		Shed	
				Flammable	Unheated		
Salicylic Acid	Combustible; slight fire hazard. Flash point 315° F.	Store in a cool, dry, ventilated place. Sweep up and remove spills for disposal.	3	----	X	----	Extinguish with water or carbon dioxide. (Water may cause frothing.)
Silver Cyanide	Moderate fire or explosion hazard. Highly poisonous. Cyanide poisoning occurs when the material is absorbed through the skin, through cuts or abrasions, or by inhalation.	Safeguard against damage to containers. Store in a cool place away from acid fumes. Spills should be swept up, taken outside and mixed with a calcium hypochlorite slurry. This same type slurry can be used to wash any residue remaining on the floor. Caution must be exercised when using this slurry as it generates heat and objectionable fumes. When in use, personnel should wear adequate protective clothing and equipment of types A and G(4).	3	X	----	----	Not applicable.
Silver Nitrate	Oxidizing material and potential fire hazard. Corrosive and poisonous.	Separate from organic or easily oxidized materials. Sweep up and remove solid spills for disposal. Neutralize liquid solution spills with a 20 percent sodium bicarbonate solution. Wear type N equipment for skin protection and type A for eye protection.	2	----	X	----	Water may be used to extinguish silver nitrate fires.
Sodium Cyanide.	Oxidizable material. Noncombustible but evolves hydrogen cyanide gas on contact with acids or moisture. Extremely poisonous.	Protect against moisture. Separate from acids and oxidizing materials. Protect container from damage. Spills should be swept up, taken outside, and mixed with a calcium hypochlorite slurry. This same type slurry can be used to wash any residue remaining on the floor. Caution must be exercised when using this slurry as it generates heat and objectionable fumes. Protective equipment of types A, B, G(4), and N are recommended.	3	----	----	X	Not applicable.
Sodium Dichromate.	Oxidizing agent. May cause fires by chemical reaction in contact with combustible materials or reducing agents.	Store in a cool, dry place. Sweep up and remove spills for disposal.	2	----	X	----	Use water.
Sodium Fluoride.	Noncombustible but may emit dangerous fumes when heated. Highly toxic by inhalation.	Store in a cool, dry place away from areas of acute fire hazard. Sweep up and remove spills for disposal. When in use, personnel should wear types A, G(4) and N protective equipment.	3	----	X	----	Large quantities of water.
Sodium Hydrosulfite.	Moderate fire hazard when exposed to moisture or heat. Oxidizable material.	Store in cool, dry place. Separate from oxidizing agents. Sweep up and remove spills for disposal.	3	----	X	----	Large quantities of water.

Nomenclature	Hazardous properties	Storage and handling*	Storage category group	Type of storage			Fire fighting phase
				Warehouse		Shed	
				Flammable	Unheated		
Sodium Hydroxide.	Highly corrosive. Causes burns to skin and eyes. Noncombustible.	Store in cool, dry place. Sweep up and remove solid spills for disposal. Neutralize liquid solution spills with a 5 percent acetic acid solution. Personnel handling this material should be equipped with types A, C, D, E, G(4), and N protective equipment as conditions may require.	1	----	X	----	Flood with water.
Sodium Nitrate.[3]	----	----	2	----	----	X	
Sodium Nitrite.[3]	----	----	2	----	----	X	
Sodium Orthosilicate.	This material is poisonous. Causes irritation on contact.	Store in a cool, ventilated area. Sweep up and remove spills for disposal.	3	----	X	----	Not applicable.
Sodium Oxalate.[3]	----	----	3	----	X	----	
Sodium Silicofluoride.	Noncombustible, highly toxic by inhalation.	Store in cool, ventilated areas. Sweep up and remove spills for disposal.	3	----	X	----	Not applicable.
Sodium Sulfide.	Moderately flammable solid, dangerous to the eyes, both in the solid form and in the form of dust. When involved in fire this material forms the very toxic sulfur dioxide. Oxidizable material.	Store in a cool, ventilated area away from acute fire hazards. Separate from oxidizing materials. Do not store near acids or other materials which are likely to liberate acid fumes. Sweep up and remove spills for disposal.	3	----	X	----	Water is an effective fire-fighting agent. Personnel must be equipped with adequate safety equipment to protect against sulfur dioxide fumes.
Sodium Sulfite.	Oxidizable material. Noncombustible but when heated may emit toxic fumes of sulfur dioxide. Slightly toxic by inhalation.	Store in a cool, dry place. Separate from oxidizing materials. Sweep up and remove spills for disposal.	3	----	X	----	Not applicable.
Stearic Acid	Slight fire hazard. Flash point 385° F.	Store in cool, ventilated area. Separate from oxidizing agents. Sweep up and remove spills for disposal.	3	----	X	----	Water (fog or spray) carbon dioxide, or dry chemical can be used to advantage. (Water may cause frothing.)
Strontium Nitrate[3]	----	----	2	----	----	X	
Sulfur	Oxidizable material. Sulfur dust or vapors are flammable when mixed with air and are considered a moderate fire hazard. When involved in fire, sulfur dioxide gas is formed, which is very toxic. Flash point 405° F.	Store in a cool, ventilated area away from acute fire hazards. Separate from oxidizing agents. Sweep up and remove spills for disposal. Personnel exposed to high concentrations of dust should be equipped with types A and G(4) protective equipment.	3	----	X	----	Water spray considered best extinguisher. Personnel fighting such fires should be protected against sulfur dioxide fumes.

See footnotes at end of table.

Nomenclature	Hazardous properties	Storage and handling*	Storage category group	Type of storage			Fire fighting phase
				Warehouse		Shed	
				Flammable	Unheated		
Sulfuric acid	Corrosive. Powerful oxidizer. Contact with this material will cause severe burns. May cause ignition by contact with combustible materials. Emits toxic fumes under fire conditions.	Safeguard container against damage. Store in cool, dry area. This acid should not be stored with nitric acid, volatile or flammable liquids, or with oxidizing agents such as peroxides. Separate from combustible materials. Handle spills as per para 5.4.2.2.1. Check with local safety officer on protective clothing requirements based on type of usage and/or in case of fire.	1	----	X	----	Dry chemical may be used.
Tannic Acid	Oxidizable material. Slight fire hazard when exposed to heat or flame. Flash point 390° F.	Store in cool, ventilated area away from acute fire hazards. Separate from oxidizing agents. Sweep up and remove spills for disposal.	3	----	X	----	Water (fog or spray) may be used to advantage.
Tetrachloroethylene.	Has a definite toxic effect on liver and kidneys. Nonflammable and not very volatile.	Store in cool, ventilated area. Absorb spills with a noncombustible sweeping compound and remove this waste for disposal. Personnel exposed to high concentrations should wear type G(4) protective equipment.	3	----	X	----	Not applicable.
Titanous Sulfate Solution.	Oxidizing material. Very corrosive. Contact with the body results in rapid destruction of tissue causing severe burns. The solution is not flammable.	Store in a cool, ventilated area. Wash spills away with water. Personnel who work with this material should wear adequate protective clothing and equipment of types C, D, E, N, and types G(2) and J where required.	3	----	X	----	Not applicable.
Toluene	Oxidizable material. A flammable liquid and a dangerous fire hazard when exposed to heat or flame. It is similar in its toxic effects to benzene. Flash point 40° F.	Store in a cool, ventilated area away from fire hazards. Separate from oxidizing agents. Absorb spills with a noncombustible sweeping compound and remove this waste for disposal. Personnel exposed to high or unknown concentrations should wear adequate protective clothing and equipment of types G(4), K, and N. Containers to be kept closed and properly labeled.	1	X	----	----	Water spray, carbon dioxide, or dry chemical may be used. (Water may be ineffective.)
Trichloroethane.	Nonflammable liquid, somewhat toxic and is known to have a seriously harmful effect upon the liver. Can cause narcosis and burns of the eyes and nose. Toxic effects of fumes are cumulative.	Store in cool, ventilated area. Absorb spills with a noncombustible sweeping compound and remove this waste for disposal. Protective equipment of types A and G(4) should be worn by personnel exposed to this material.	3	----	X	----	

Nomenclature	Hazardous properties	Storage and handling*	Storage category group	Type of storage			Fire fighting phase
				Warehouse		Shed	
				Flammable	Unheated		
Trichloroethylene.	Oxidizable material. Nonflammable. May cause acute poisoning when excessive amounts are inhaled.	Store in cool, ventilated place. Absorb spills with a noncombustible sweeping compound and remove this waste for disposal. Personnel exposed to this material should be equipped with types A, B, C, D, and G(2) or G(3) equipment as conditions warrant.	3	----	X	----	
Triethylamine	Flammable liquid. Dangerous hazard when exposed to flame. Flash point 20° F.	Protect container against damage. Absorb spills with a noncombustible sweeping compound and remove this waste for disposal.	1	X	----	----	Carbon dioxide, water spray, or dry chemical. (Water may be ineffective.)
Turpentine	Oxidizable material. A flammable liquid and moderate fire hazard. Low concentrations can cause nose and throat irritations. Flash point 95° F.	Store in a cool, ventilated area away from acute fire hazards or powerful oxidizing agents. Absorb spills with a noncombustible sweeping compound and remove this waste for disposal. Personnel exposed to this material for long periods should wear a respirator.	1	----	----	X	Carbon dioxide, water spray, or dry chemical may be used effectively. (Water may be ineffective.)
Zylene	Oxidizable material. Flammable liquid; dangerous fire and explosive hazard. Can cause acute poisoning by inhalation of fumes or vapors. Flash point 81-90° F.	Store in a cool, ventilated place away from areas of acute fire hazard. Separate from oxidizing materials. Absorb spills with a noncombustible sweeping compound and remove this waste for disposal. Personnel exposed to high or unknown concentrations should wear adequate protective clothing and equipment of types G(4), K, and N. Containers to be kept closed and properly labeled.	1	X	----	----	Foam, cabon dioxide, water spray, or dry chemical may be used to reduce rate of burning. (Water may be ineffective.)

---

[1] See Calcium Hypochlorite.

[2] See Oxalic Acid.

[3] See Potassium Nitrate.

*Word "Separate" used in this column means preferably storage in a different bay or building. When not feasible the intent is to separate incompatible material by as much space as practical within a building.

CHAPTER 5

STORAGE OF SPECIAL COMMODITIES

Section VI. MISCELLANEOUS COMMODITIES

	Paragraph	Page
General	5.6.1	56–1
Batteries and electrolyte	5.6.2	56–1
Electronic materiel	5.6.3	56–2
Photosensitized materiel (film and paper) and flash bulbs	5.6.4	56–2
Self-sealing fuel cells	5.6.5	56–2
Internal combustion engines	5.6.6	56–2
Lubricating oils and greases	5.6.7	56–2
Paints	5.6.8	56–2
Life floats	5.6.9	56–2
Linoleum	5.6.10	56–2
Fiber rope	5.6.11	56–2
Wire rope	5.6.12	56–2
Clay targets	5.6.13	56–2
Cement	5.6.14	56–2
Navigation timepieces	5.6.15	56–2.1
Machine tools and production equipment	5.6.16	56–2.1
Tires, tubes, and rubber products	5.6.17	56–2.1
Abrasive or grinding wheels	5.6.18	56–2.10
Glass	5.6.19	56–2.10
Miscellaneous chemicals	5.6.20	56–2.10
Musical instruments	5.6.21	56–2.10
Strategic and critical materials	5.6.22	56–2.10
Brushes: feather, wool, bristle, and hair	5.6.23	56–2.10
Flight clothing	5.6.24	56–2.10
Army Area Communications Systems (AACOMS) Shelters	5.6.25	56–3

5.6.1. General

See TM 743–200.

5.6.2. Batteries and Electrolyte

5.6.2.1. Definitions.

5.6.2.1.1. Primary battery. One that cannot be recharged efficiently. A flashlight battery is an example of this type. The two types of primary batteries are dry and reserve.

5.6.2.1.1.1. Dry battery (commonly referred to as dry cell battery) is characterized by an electrolyte which is either in the form of a moist paste or is absorbed in a porous material.

5.6.2.1.1.2. Reserve battery is one that must be activated by the addition of a fluid (usually water).

5.6.2.1.2. Secondary battery. One that can be restored repeatedly by recharging. An automobile battery is an example of such a battery. Secondary batteries are activated by the addition of electrolyte.

5.6.2.1.2.1. Secondary batteries charged and with electrolyte are commonly referred to as wet charged; those charged but without electrolyte are commonly referred to as dry charged.

5.6.2.1.3. Service battery. A battery used in engine-powered equipment for cranking the engine, for lights, horn, etc.

5.6.2.1.4. Power battery. A battery, larger and of greater ampere hour-capacity than a service battery; used in lieu of engine power for vehicle propulsion and for operation of component assemblies. It is generally referred to as an industrial battery.

5.6.2.2. Receipt. Wet-charged batteries received with new or returned equipment will be tested for specific gravity reading and if low placed on trickle charge.

5.6.2.3. Storage.

5.6.2.3.1. Primary batteries will be stored and tested in accordance with the requirements of TM 11-415 and SB 11-30.

5.6.2.3.1.1. Dry batteries are not considered as part of the equipment and will not be stored with the equipment.

5.6.2.3.2. Secondary batteries will be stored in accordance with the requirements of TM 10-1690A and TM 9-6140-200-14 except for dry-charged batteries and electrolyte which will be stored with the applicable end item.

5.6.2.3.3. Batteries and electrolyte packed inside boxed or crated equipment will remain with equipment in storage.

5.6.2.4. Packaging for Storage and Shipment. Batteries and electrolyte will be packaged, packed, and marked for storage in accordance with applicable specifications, standards, packaging data sheets and technical publications.

5.6.2.4.1. Preparation for shipment and transportation of batteries and electrolyte will be in accordance with Title 14, Part 103 of Federal Aviation Regulation and Department of Transportation's Hazardous Materials Regulations (Title 46, Part 146 and Title 49, Part 170-178 of Code of Federal Regulations) for shipment by water. (See TM 38-250 for shipment by military aircraft.)

5.6.2.5. Issue.

5.6.2.5.1. Dry batteries issued to CONUS customers will be selected from oldest serviceable stock, unless specific instructions to the contrary are indicated on the requisitions.

5.6.2.5.2. Dry batteries issued to oversea customers, including MAP (except as noted below), will be selected from stock with life expiration date at least 9 months beyond the date of issue.

5.6.2.5.3. Dry batteries supplied to tropical areas, will be those batteries manufactured within the 6-month period preceding date of issue.

5.6.2.5.4. Secondary batteries furnished with equipment on shipments from depots to oversea consignees will be dry-charged and accompanied by a sufficient quantity of electrolyte for activation.

5.6.2.5.5. Secondary batteries furnished with equipment destined for CONUS users, when such equipment is shipped by rail or truck, will be dry-charged with electrolyte, except that:

5.6.2.5.5.1. If equipment is for immediate use, or if equipment is to be combat-ready, batteries will be wet-charged.

5.6.2.5.6. Wet-charged batteries (activated dry-charged battery) will be furnished for equipment shipped by driveaway.

5.6.2.6.7. Testing of dry batteries will be as prescribed in SB 11-30. On each issue, ascertain that proper "Test before using" data are explained.

5.6.3. Electronic Materiel

(See TM 743-200).

5.6.4. Photosensitized Materiel (Film and Paper) and Flash Bulbs

(See TM 743-200).

5.6.5 Self-Sealing Fuel Cells

(See TM 743-200).

5.6.6. Internal Combustion Engines

(See TM 743-200).

5.6.7. Lubricating Oils and Greases

(See TM 743-200).

5.6.8. Paints

(See TM 743-200).

5.6.9. Life Floats

(See TM 743-200).

5.6.10. Linoleum

(See TM 743-200).

5.6.11. Fiber Rope

(See TM 743-200).

5.6.12. Wire Rope

(See TM 743-200).

5.6.13. Clay Targets

(See TM 743-200).

5.6.14. Cement

(See TM 743-200).

5.6.15. Navigation Time Pieces

(See TM 743-200).

5.6.16. Machine Tools and Production Equipment

(See TM 743-200).

5.6.17. Tires, Tubes, and Rubber Products

5.6.17.1. General. The following procedures are prescribed to provide the protection and care which must be exercised at all times in the handling of tires, tubes, and rubber products.

5.6.17.2. Scope. These instructions apply to storage of mounted and unmounted pneumatic rubber tires (new, used, and reconditioned), solid tires and track rubber components, rubber repair materials, and tread-rubber (camelback—a synthetic rubber compound used for supplying shoulder to shoulder and bead to bead retreading).

5.6.17.3. Warehouse Storage.

5.6.17.3.1. Tires, tubes and rubber products will be stored in warehouses which are clean, dry, and carefully chosen to provide maximum safety and protection. Warehouses used for this type storage should:

5.6.17.3.1.1. Provide adequate protection against fire and reduce fire hazards to a minimum. The warehouse will be equipped with adequately insulated wiring, sprinkler system, and the required number of fire extinguishers (see chap. 6, TM 743-200).

5.6.17.3.1.2. Have windows or other openings covered or painted to keep out sun light.

5.6.17.3.1.3. Provide suitable temperature. The recommended temperature range for the storage of tires and tubes is 40° to 80° F.

5.6.17.3.1.4. Be free of oil or petroleum products. A wooden floor which is oil soaked may not harm properly palletized tires but it increases the fire hazard. Housekeeping in the building must be of the highest order. Covered trash cans must be provided.

5.6.17.3.2. Drafts or other movements of air are undesirable since air currents increase rubber-deteriorating oxygen in the air and aid combustion in case of fire. The more oxygen present the more rapid is the rate of deterioration of tires. To reduce circulation of air to a minimum, tires should be stored in warehouses with slow moving bulk stock wherever possible. The warehouse will be kept closed except when materiel is being moved into or out of the building.

5.6.17.3.3. Electrical discharges generate ozone which greatly accelerates the deterioration of tires. Tires should not be stored in the vicinity of operable electric motors, generators, switches, or other electrical devices.

5.6.17.3.4. High temperatures increase the rate of deterioration. Tires should not be stored near radiators or other sources of heat.

5.6.17.3.5. High tension power lines generate ozone. Tires or vehicles with rubber track should not be stored in the vicinity of these lines.

5.6.17.4. Shed or Open Storage. Unmounted tires and tubes must not be stored in the open. Where closed warehouses are not available for storage of unmounted tires, or where it is necessary to store tires mounted on vehicles in open storage for periods exceeding 90 days, pending removal to covered space, they should be protected in accordance with MIL-T-46755 and 5.6.17.8. below. Tires manufactured or reprocessed with anti-ozonant "OZ" compounds do not require additional protection until 2 years from date of manufacture.

NOTE

> Date of manufacture and "OZ" marking are normally imprinted on the tire sidewall. Date of reprocessing is normally imprinted on a reconditioned tire sidewall.

5.6.17.5. Handling. Care will be used at all times in the handling of tires, tubes, and rubber products. They must not come in contact with gasoline, oil, or other petroleum products. Cutting, scuffing, or scraping of tires during handling must be avoided.

5.6.17.6. Storage Techniques and Aids.

5.6.17.6.1. Tires (tube or tubeless type) should be stored in a vertical position and grouped by size on standard 40" by 48" pallets combined with appropriate size standard pallet support sets, to form a tire storage unit (figs. 0.1 and 0.2). As an alternate method, pallet racks may be used if they are more readily available. Suitable wood racks, steel racks or slotted-angle receptacles and non-standard pallet support sets, now in use, are acceptable pending normal replacement action.

5.6.17.6.2. For tires needing greater height than provided by the standard uprights of the

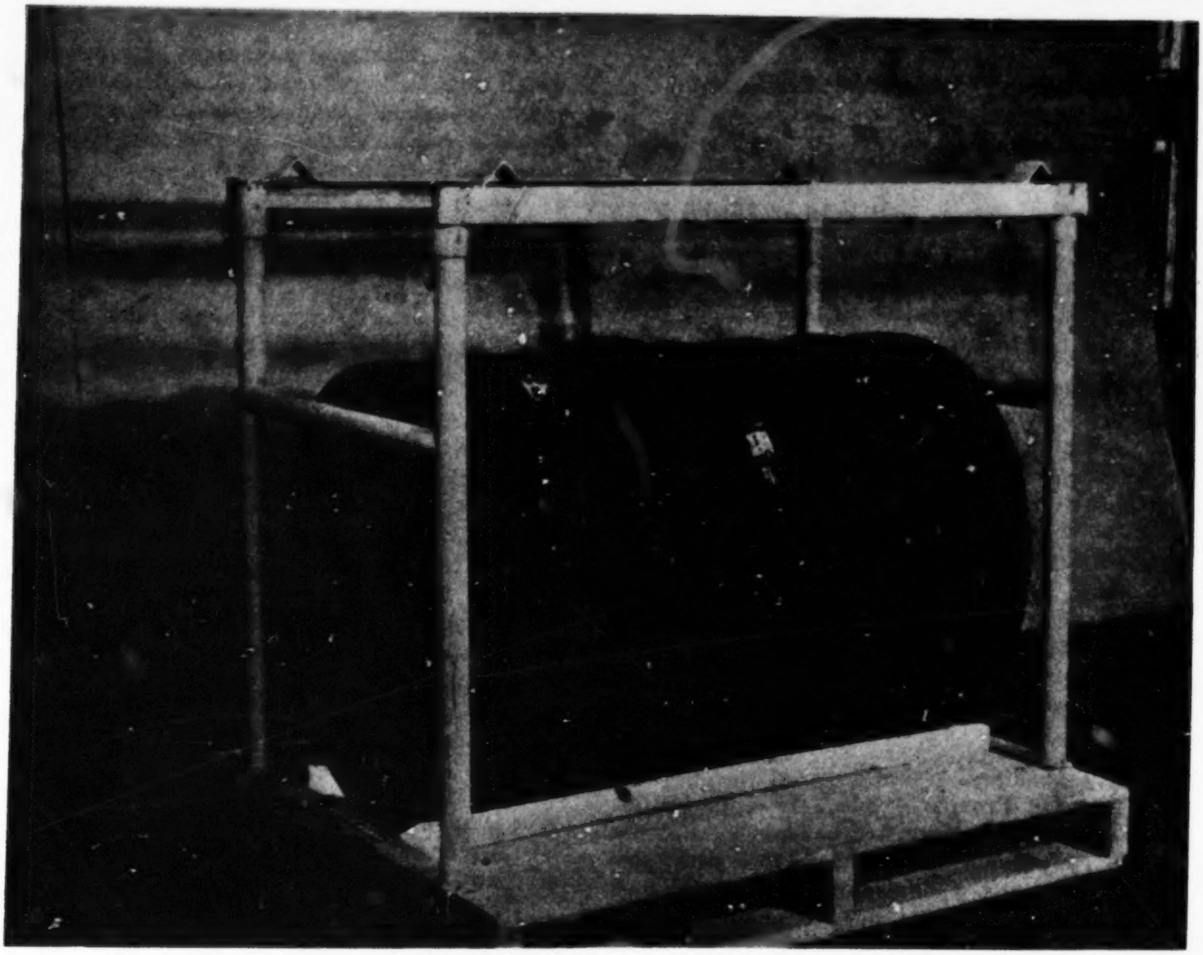


Figure 0.1. Pallet support sets used with 40" by 48" flat pallet for tire storage.

pallet support sets, the height of the opening can be extended by adding a 12-inch piece of steel tubing (fig. 0.3). A sleeve welded to this tubing will permit fitting this section over the existing upright member and into the socket of the crossbar. In this way, the support set can be returned to its original dimension when desired.

5.6.17.6.2.1. For tires needing greater height than that provided by the standard upright of the pallet support sets but less than a 12-inch extension, a 6-inch extension can be used. Figure 0.8 depicts pallets and support sets with extensions added.

5.6.17.6.3. For those cases where quantity of larger size tires permits, or the shortage of support sets available will make it impractical to use standard pallets for tire storage, additional modification can be made to store a larger quantity of tires per storage aid.

5.6.17.6.3.1. A 40" x 96" storage aid (fig. 0.4) can be made by joining two 40" x 48" two-way pallets (Federal Specification NN–P–71, Type 1) together. This can be done by nailing through the adjacent stringers at the center and adding a 2" x 4" lumber strip to the pallet deck along the combined length over each outside edge, front and back. Extension of the uprights, if required, can be performed in the same manner as described in 5.6.17.6.2. In this modification, 3" x 1 1/2" channel should be used in place of the usual angle iron for the crossbars to prevent these members from bending under stress of superimposed loads.

5.6.17.6.4. Unmounted tube type tires may be stored in pyramidal fashion as depicted in figures

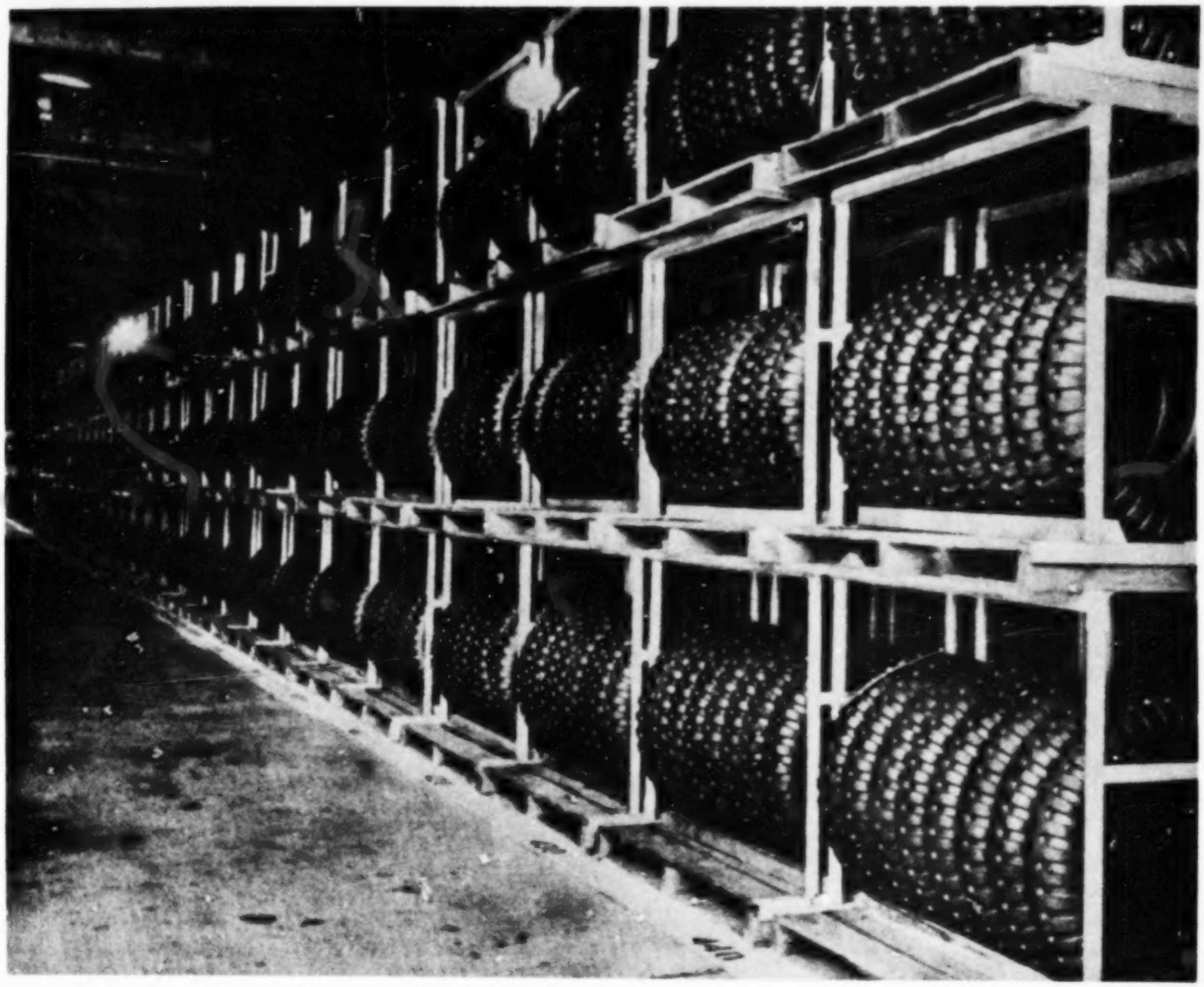


Figure 0.2. Typical storage in pallet support sets.

0.7 and 0.8. This method permits the attainment of adequate storage heights with a minimum requirement for storage aids.

5.6.17.6.4.1. Tires elected to be stacked in pyramidal fashion should be bundled as follows (figs. 0.5 and 0.6).

5.6.17.6.4.1.1. Tire sizes 14 inches outside diameter (OD) up to a size less than 26 inches OD should be bundled utilizing four evenly spaced 1/2-inch X .020-inch, QQ–S–781, flat steel straps. The compression of the bundled load should amount to 15 percent of the bundled height. Compressed bundles of these sizes should not exceed 43 inches in height. When compressed bundles do not exceed 43 inches, two bundles will adequately fit (horizontally) side by side when shipment is by MILVAN or SEAVAN.

5.6.17.6.4.1.2. Tire sizes 26 inches OD up to 48 inches OD should be bundled utilizing four evenly spaced 3/4-inch X .023-inch, QQ–S–781, flat steel straps. Compressed bundles of these sizes should also not exceed 43 inches in height.

5.6.17.6.4.1.3. Tires with flaps will have the

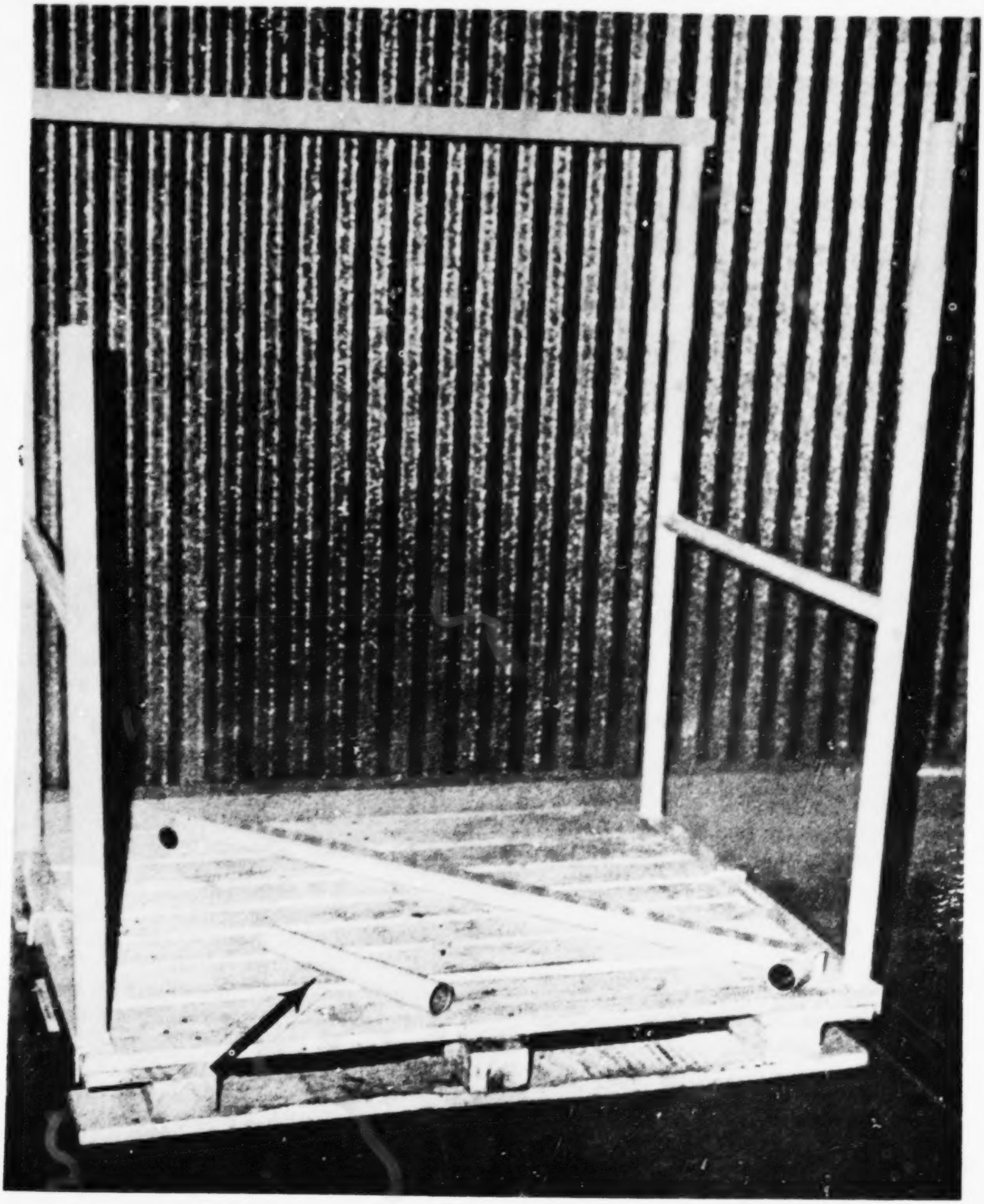


Figure 0.3. Pallet support set depicting 12-inch extension.

flap folded in half and placed inside the tire prior to strapping.

5.6.17.6.4.2. As long as the tire bundles on the bottom layer are chocked with a 2x4 or 4x4, tires can be safely stacked four bundles high.

5.6.17.6.4.2.1. An exception to the above are tires size 11.00 x 15 which can be pyramidal stacked five bundles high (fig. 0.7). The fifth layer should be offset from front to rear to tie the stack of tires together to provide more stability to the block stack.

5.6.17.6.4.3. Tires can also be pyramidal stacked atop a base layer of tires stored in pallets and support sets as illustrated in figure 0.8. In addition to greater space utilization through achievement of higher stacking, this method provides better stack stability to the tires being stored.

5.6.17.6.4.4. Two or more tire sizes should not be piled in the same stack.

5.6.17.7. Stock Rotation. Tires in storage can deteriorate in time to an unuseable state. Stock rotation is necessary in order to prevent such loss. To insure maximum protection against loss from deterioration, a strict policy of issuing oldest stock first will be practiced. When tires or tubes are received for storage, the month and year of manufacture or retread will be indicated on the pallet placard. This will aid in selecting the oldest stock first.

5.6.17.8. Tires on Wheeled Vehicles and Equipment.

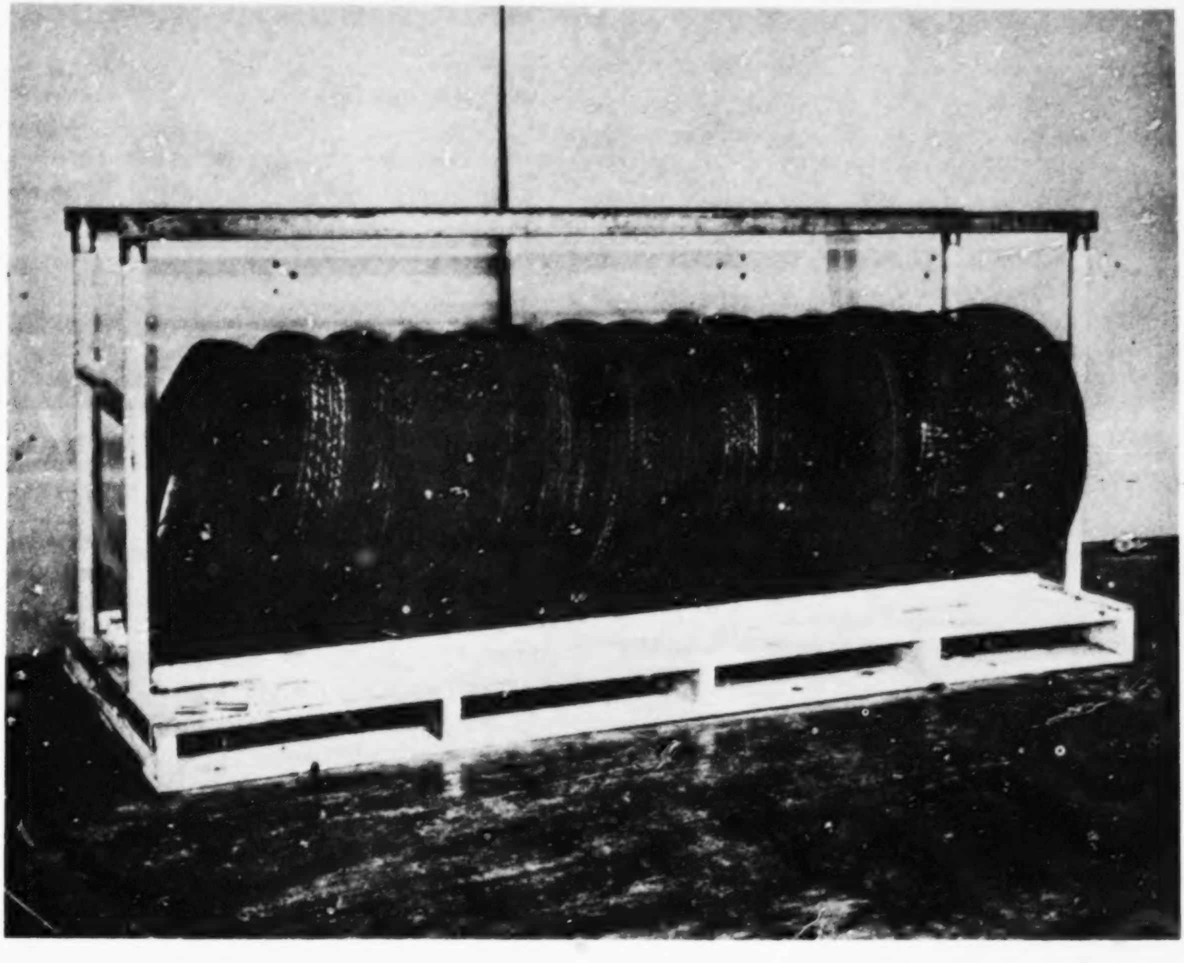


Figure 0.4. A 40" by 96" tire storage receptacle, using standard support set uprights with 96-inch cross bars.

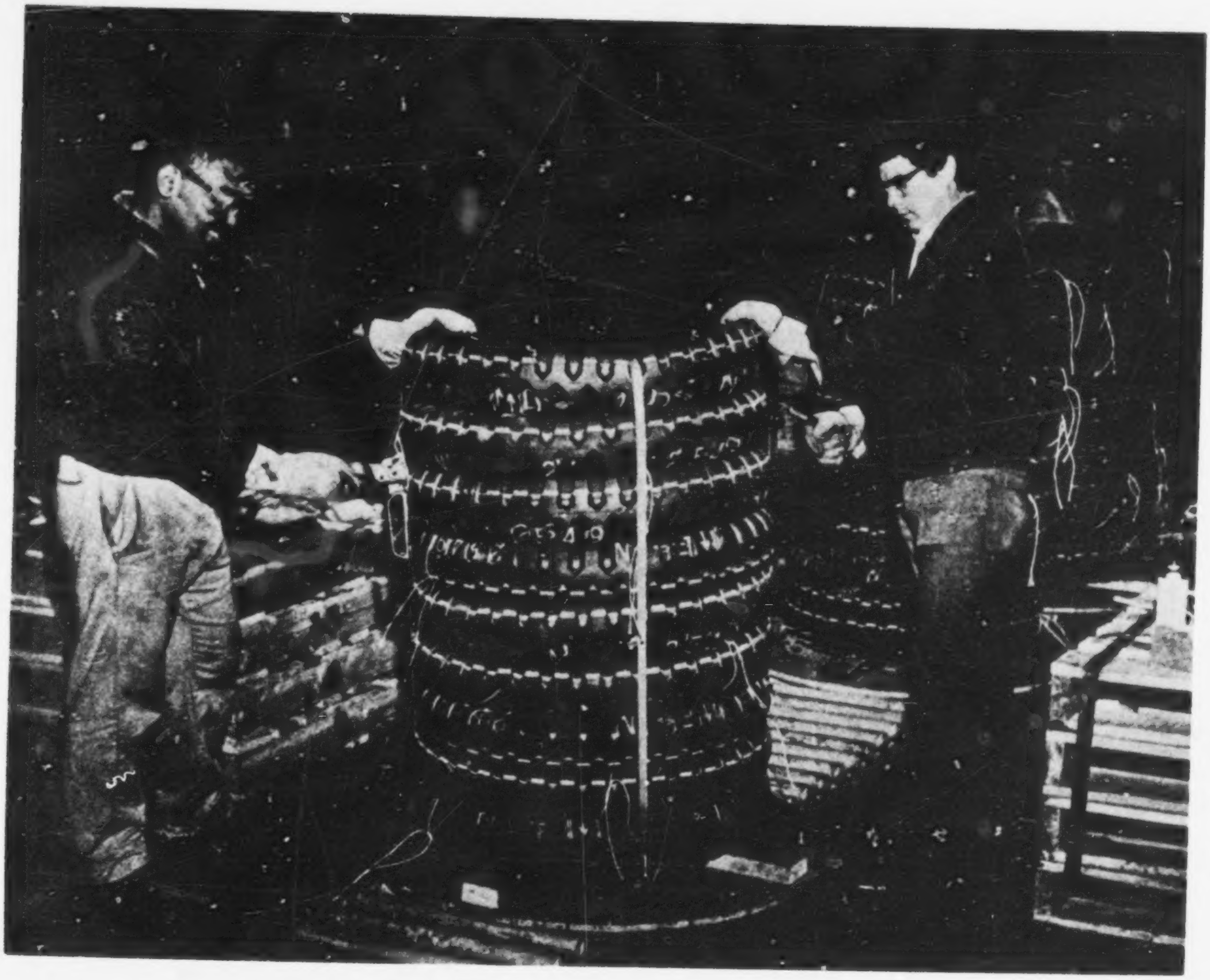


Figure 0.5. A manual method of bundling tires prior to pyramidal stacking.

5.6.17.8.1. The following storage methods will be used when storing rubber-tired Army equipment in covered or open space.

5.6.17.8.1.1. Pneumatic rubber-tired equipment will be stored with tires inflated to normal operating pressure.

5.6.17.8.1.2. Blocking wheels free of the ground is not required. Equipment now stored on blocks will be retained on blocks until necessary to move it. Tires should be protected as indicated in 5.6.17.4. above.

5.6.17.8.1.3. In CONUS, information regarding any adverse conditions noted during storage that can be traced to equipment storage without off ground blocking will be furnished through channels to Headquarters, US Army Materiel Command, ATTN: AMCDT-BS. Oversea commands will route such information to the appropriate command headquarters.

5.6.17.8.1.4. Equipment in the storage area will be visually checked for soft or flat tires at not less than 60-day intervals. Immediate corrective action to prevent tire damage will be taken. Soft or flat tires that cannot immediately be reinflated or repaired will be relieved of the weight of the equipment until situation is corrected. This does not apply to mounted tires that are unserviceable-uneconomically reparable.

5.6.17.8.2. Equipment placed on racks to facilitate double or triple-deck storage does not require maintenance of pressure and examination

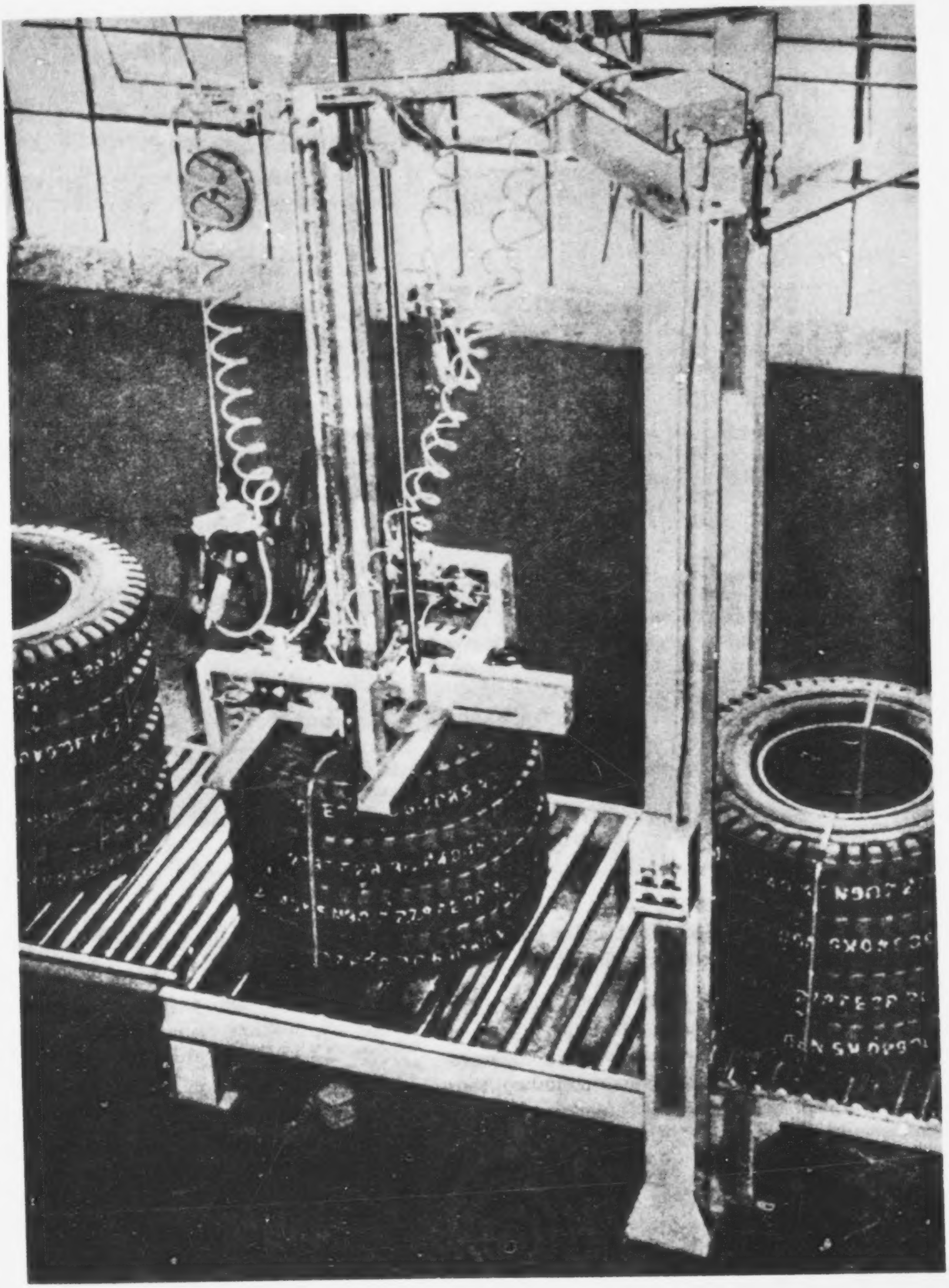


Figure 0.6. Automatic tire strapping machine for use in tire bundling operations.

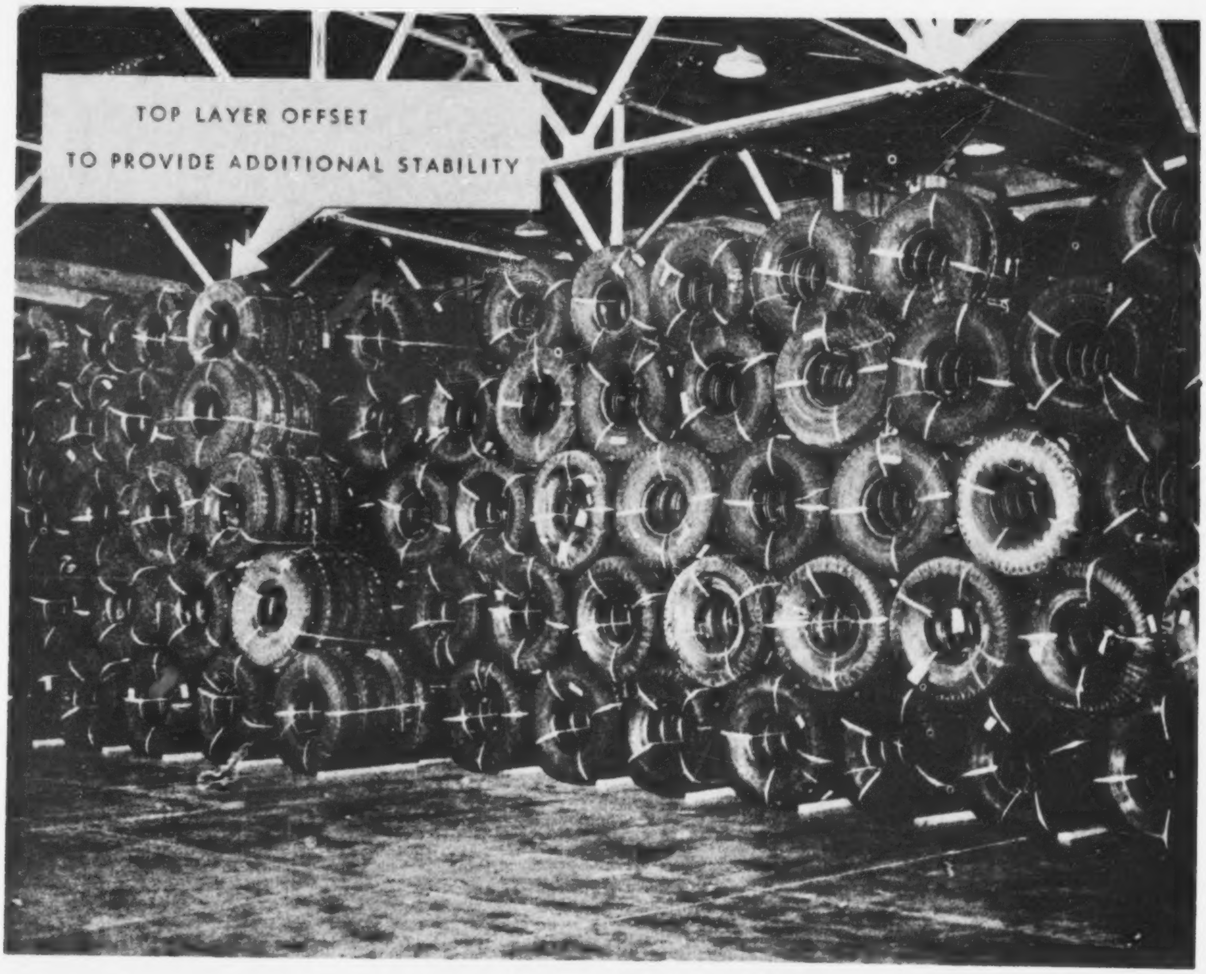


Figure 0.7. Block stack of 11.00 x 15 tires.

as prescribed in 5.6.17.8.1. above, if the tire is not supporting the weight of the equipment.

5.6.17.9. Used Tires. Used serviceable tires will not be placed in storage until they have been cleaned, inspected, and had all foreign material removed. Serviceable used tires, including those reconditioned, will be stored and handled the same as new tires.

5.6.17.10. Solid Rubber Tires and Track Components.

5.6.17.10.1. Solid rubber tires, rubber components of combat vehicle track, track support rollers, and track idler wheels will be protected as outlined in 5.6.17.3. above.

5.6.17.11. Tubes.

5.6.17.11.1. Tubes must be handled with care equal to that given to tires.

5.6.17.11.2. New tubes should be stored in the original package and protected as outlined for tires (5.6.17.3. above).

5.6.17.11.3. Used serviceable tubes should be completely deflated by removing the valve core. They can then be folded and stored as outlined in 5.6.17.3. above.

5.6.17.11.4. Tubes will be placed in storage grouped according to size and type. Removal from storage will be on the basis of oldest stock first.

5.6.17.11.5. Self-sealing tubes must be inflated enough to retain full molded size. Storage aids (e.g., pallet support sets) will be used to assure retention of shape and size.

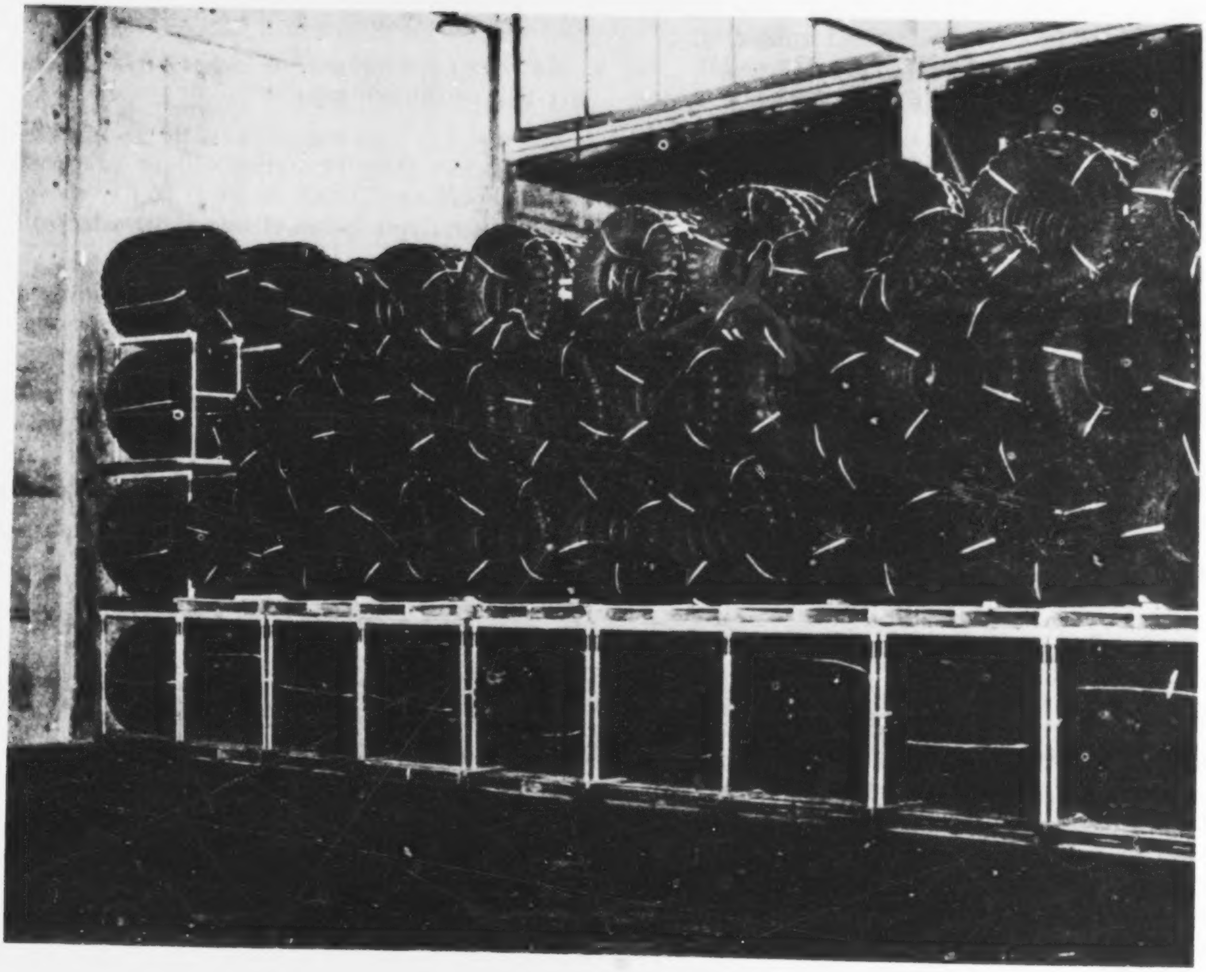


Figure 0.8. Tires stacked atop a base layer of pallets and support sets. Note the 6-inch extensions on the support set uprights.

5.6.17.12. Rubber Repair Materials and Treadrubber (camelback).

5.6.17.12.1. Rubber repair materials procured under Federal Specification ZZ–T–416 are expected to remain satisfactory for their intended use for a minimum period of 12 months after date of manufacture.

5.6.17.12.2. The materials may show a harmless light sulphur or antiozonant bloom when the following storage and shipment conditions have been maintained:

NOTE

> Bloom is defined as discoloration caused by antiozonants or waxes seeping out of the rubber. The color is generally pink to red on natural rubber and silver crystallized formation on synthetic rubber.

5.6.17.12.2.1. The materials have been protected from physical damage during the storage and shipment period.

5.6.17.12.2.2. The maximum ambient air temperature during storage and shipment has not exceeded +100° F.

5.6.17.12.2.3. The average ambient air temperature during storage and shipment has not exceeded +80° F.

5.6.17.12.2.4. During the complete period of shipment and storage, the material has not been subjected to ambient temperatures of 90° to 100° F. for more than a total of 3 months.

NOTE

Storage life of unvulcanized rubber is greatly increased by keeping the building temperature between 32° and 90° F.

5.6.17.12.2.5. To control these requirements temperature recording equipment will be provided.

5.6.17.12.3. All rubber repair materials and camelback will be stored in sealed boxes with date of manufacture visible on the outside of the box.

5.6.17.12.4. When 9 months of age, camelback and other unvulcanized rubber repair materials will be inspected by a qualified inspector. Materials that deteriorate to an unserviceable condition within the 12 month warranty period, will be reported immediately to the appropriate accountable supply distribution activity.

5.6.17.13. Flaps. Used flaps will be cleaned, rolled, identified, and placed in bins.

5.6.17.14. Rubber Cements. Rubber cements must be kept within the same temperature range as camelback and all containers must be kept tightly closed at all times.

5.6.17.14.1. Rubber cements, dependent upon flash point, are either flammable liquids or combustible liquids and must be considered for storage in light of their flammability properties. Refer to Section IV, Hazardous Commodities, for storage requirements.

5.6.17.15. Shipping Instructions.

5.6.17.15.1. Pneumatic tires, tubes, and tire flaps will be prepared for shipment in accordance with 5.6.17.15.1.1. through 5.6.17.15.1.6 below.

5.6.17.15.1.1. Motorcycle, bicycle and tires with an outside diameter less than 14 inches will be packed in exterior shipping containers in accordance with MIL-T-4 and unitized on 40- x 48-inch four-way pallets conforming to NN-P-71, type IV, medium density wood.

5.6.17.15.1.2. Tire sizes 14 inches outside diameter up to 48 inches outside diameter will be strapped as outlined in 5.6.17.6.4.1.1. through 5.6.17.6.4.1.3. above.

5.6.17.15.1.3. Tires over 48 inches outside diameter will be shipped loose.

5.6.17.15.1.4. Tubeless tires with an outside diameter less than 14 inches will be prepared for shipment as outlined in 5.6.17.15.1.1. above. Tubeless tires over 14 inches outside diameter will be shipped loose.

5.6.17.15.1.5. Solid rubber tires will be unitized for shipment in accordance with specification ZZ-T-391.

5.6.17.15.1.6. Tread rubber (camelback) will be prepared for shipment in accordance with military specification MIL-T-13584.

5.6.17.15.2. Tires will be marked in accordance with MIL-STD-129.

5.6.17.15.3. When tires and tubes are included in kits authorized and provided by Modification Work Orders, they will not be removed from the packaged kit for storage.

5.6.18. Abrasive or Grinding Wheels

(See TM 743-200).

5.6.19. Glass

(See TM 743-200).

5.6.20. Miscellaneous Chemicals

(See TM 743-200).

5.6.21. Musical Instruments

(See TM 743-200).

5.6.22. Strategic and Critical Materials

(See TM 743-200).

5.6.23. Brushes: Feather, Wool, Bristle, and Hair

(See TM 743-200).

5.6.24. Flight Clothing

(See TM 743-200).

5.6.25. Army Area Communications System (AACOMS) Shelters

5.6.25.1. General. ACCOMS shelters are bulky, relatively lightweight items. These factors coupled with the need for effective space utilization make them excellent candidates for stacking in storage. Stacking is possible if structural characteristics are fully recognized and the technique used takes advantage of the structural members possessing the greatest strength.

5.6.25.2. Crated shelters. Crated shelters are fully supported by the crate and can be stacked and handled in the same manner as any other crated item of similar size and weight.

5.6.25.3. Uncrated shelters. Uncrated shelters require that close attention be paid to structural members in order to prevent damage during storage and handling. Care must be taken in stacking to assure that doors and frames are not distorted or otherwise damaged. Uncrated shelters may be placed in three general groupings for storage purposes.

5.6.25.3.1. Group A. The shelters in this group are approximately 147 inches long, 87 inches wide, and 83 inches high. Empty weight is in the 1,000-to 1,380-pound range. Installation of equipment may raise the total weight to 6,500 pounds. This group includes the S-141 and S-280 shelters.

5.6.25.3.2. Group B. The shelters in this group range from 77 to 87 inches long, 61 to 79 inches wide,mand 63 to 70 inches high. Empty weight is in the 300- to 800-pound range. Installation of equipment may raise the total weight to 2,700 pounds. This group includes the S-144, S-250, and S-318 shelters.

Figure 1. Forks/fork extensions reaching completely across the width of the shelter.

5.6.25.3.3. Group C. This group encompasses the older wooden frame, curved roof shelters.

5.6.25.4. All shelters will be handled and stacked with a forklift truck of sufficient capacity or lifted by a crane whenever one is available. When using the forklift truck, consideration must be given to the extended load center of the shelters when determining forklift capacity. Forks/fork extensions are required to reach completely across the width of the shelter in order to prevent damage to skids or floors (fig. 1). It should be noted that even when fork openings are provided, they may not be of sufficient dimensions to allow the use of extensions. To enable the truck forks to pass under the skids, each shelter on the storage floor will be placed upon two timbers of sufficient height, one each across the skids ends. Dunnage will be used to prevent possible damage to the floors and to ensure that the back plate of the forklift does not contact the side of the shelters (figs. 2 and 3).

5.6.25.5. Storage techniques. Shelter stacking height and method is dependent upon the size, construction and total weight, i.e., empty weight of the shelter plus the weight of any installed equipment. Three high is the maximum allowable height under any circumstance.

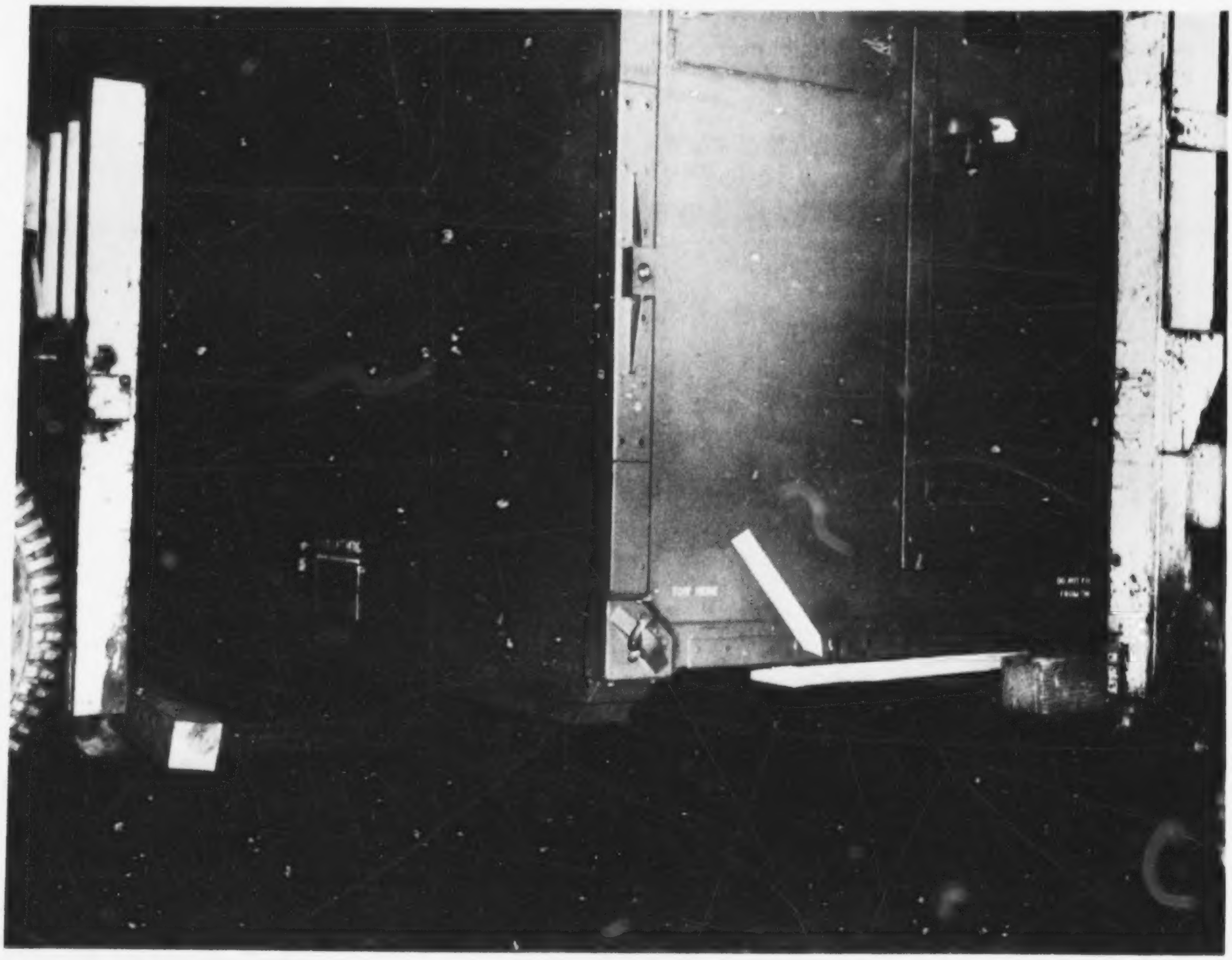


Figure 2. Arrows indicate placement of dunnage used to protect the bottom of shelter when raising one end.

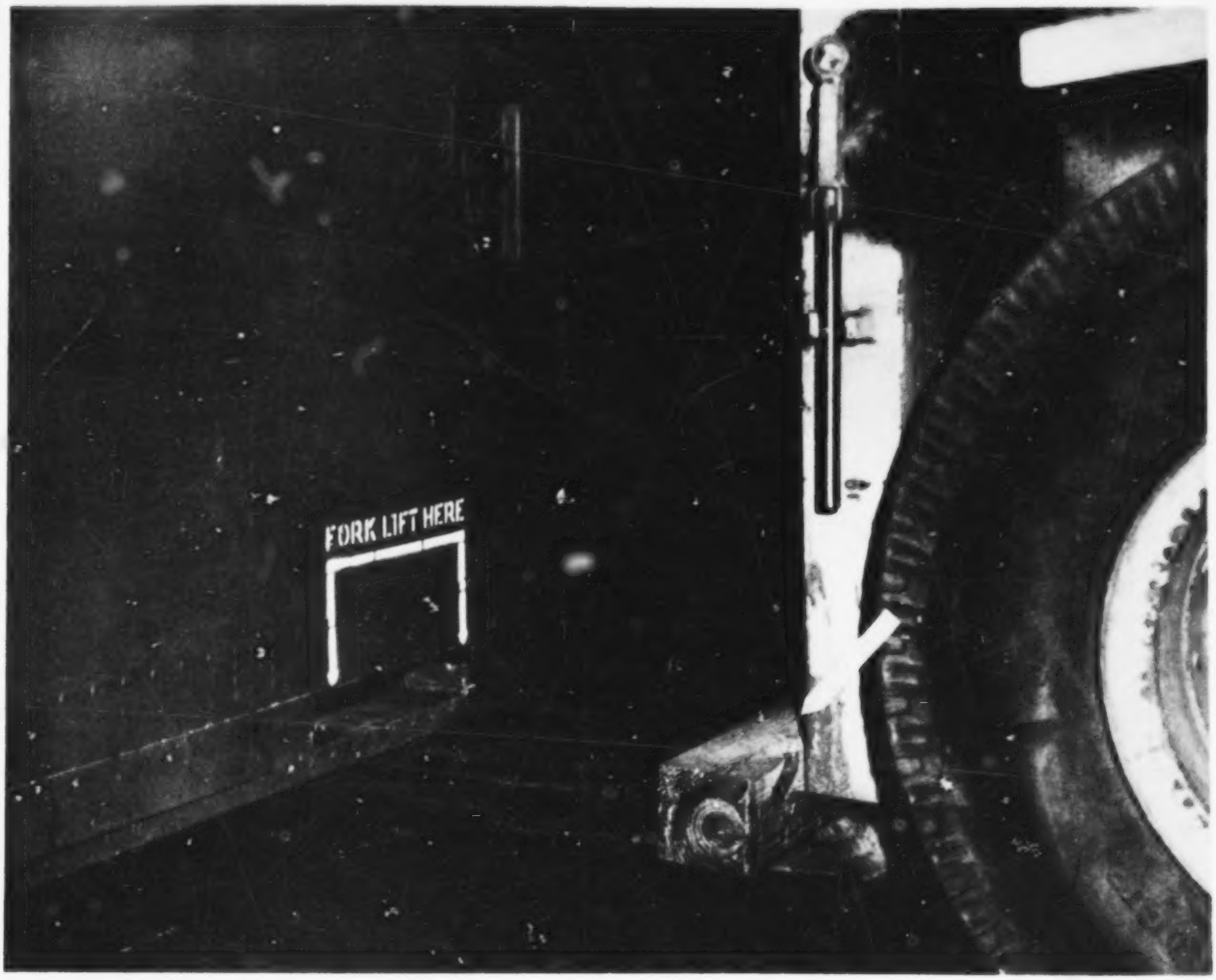
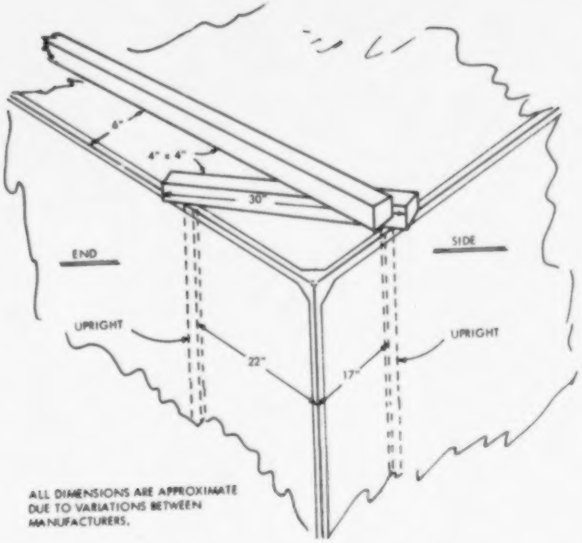


Figure 3. Dunnage placed on forks to avoid contact between the truck back plate and the side of the shelter.

5.6.25.5.1. Group A shelters will safely support a total weight of 22,000 pounds. Since a portion of the shelter load is affixed to the shelter's sidewall, the weight of the bottom shelter must be included in the 22,000-pound limit. These shelters will be stacked utilizing 4-by 4-inch dunnage placed so that the weight of the superimposed shelters bears on the vertical structural members located on either side of the corners (fig. 4). The precise location of these uprights may vary slightly in shelters from different manufacturers. It is usually possible to locate them visually because of the rivets or other fasteners used to hold them in place (fig. 5). After location of the structural members and the placement of the diagonal dunnage, place a piece of 4- by 4-inch dunnage approximately 90 inches long across the width of the shelter to support the skids of the superimposed shelter (fig. 6). This dunnage must be placed behind the bevel on the skids. A completed stack is depicted in figure 7.


6"
4" x 4"
30"
END
SIDE
UPRIGHT
UPRIGHT
22"
17"

ALL DIMENSIONS ARE APPROXIMATE DUE TO VARIATIONS BETWEEN MANUFACTURERS.

Figure 4. Placement of stacking dunnage.

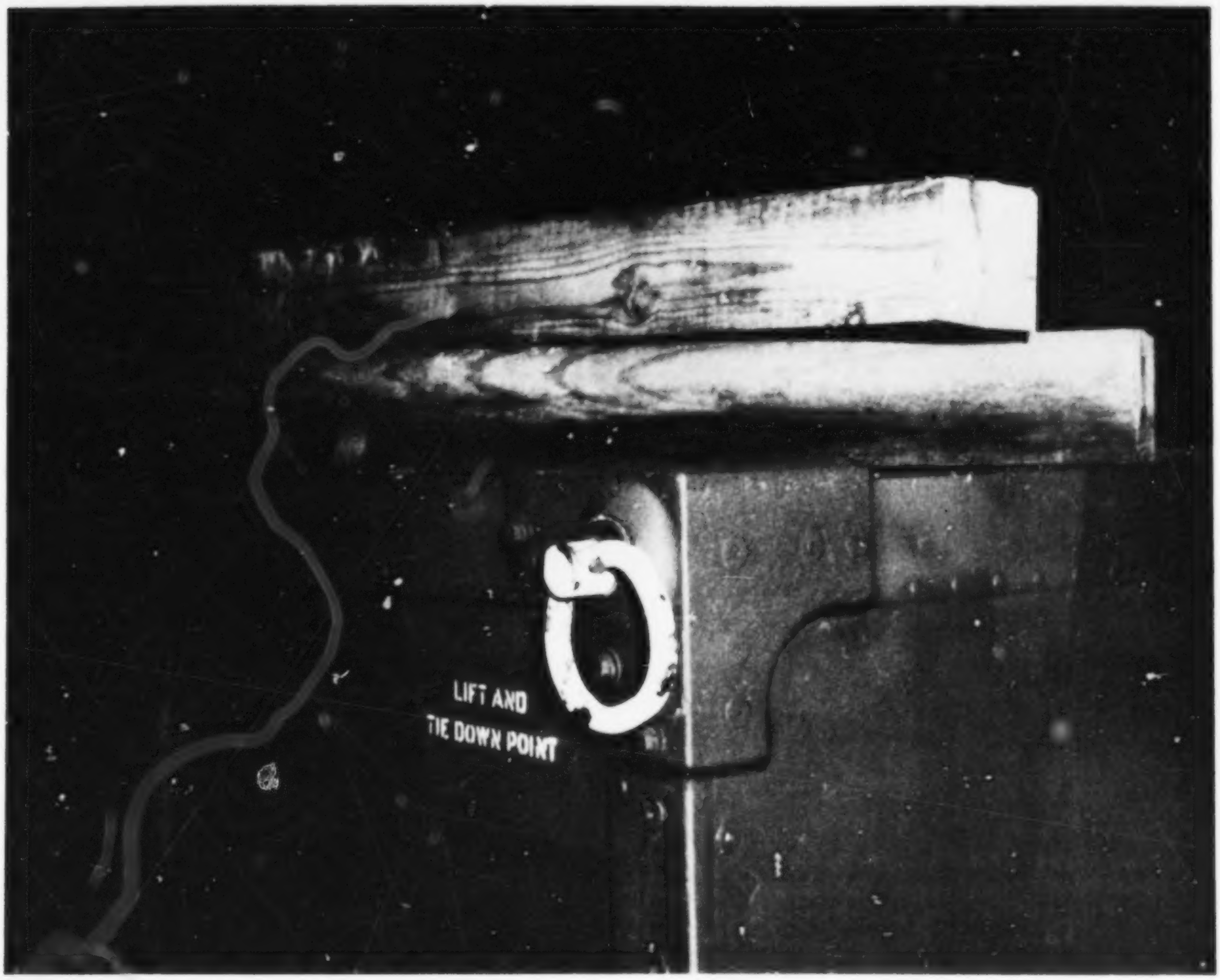

LIFT AND
TIE DOWN POINT

Figure 5. Location of rivets on vertical structural members.

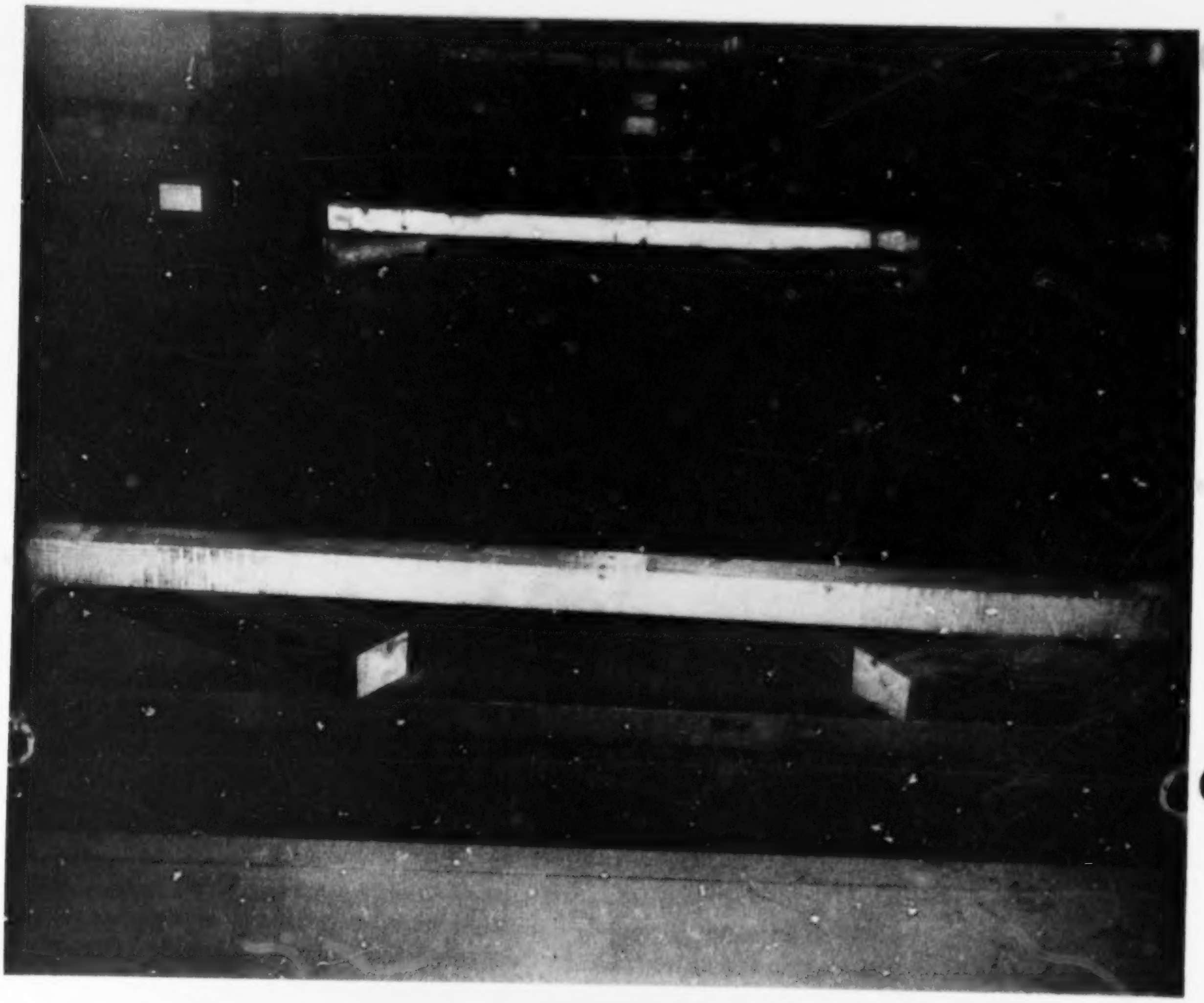


Figure 6. Complete dunnage pattern.

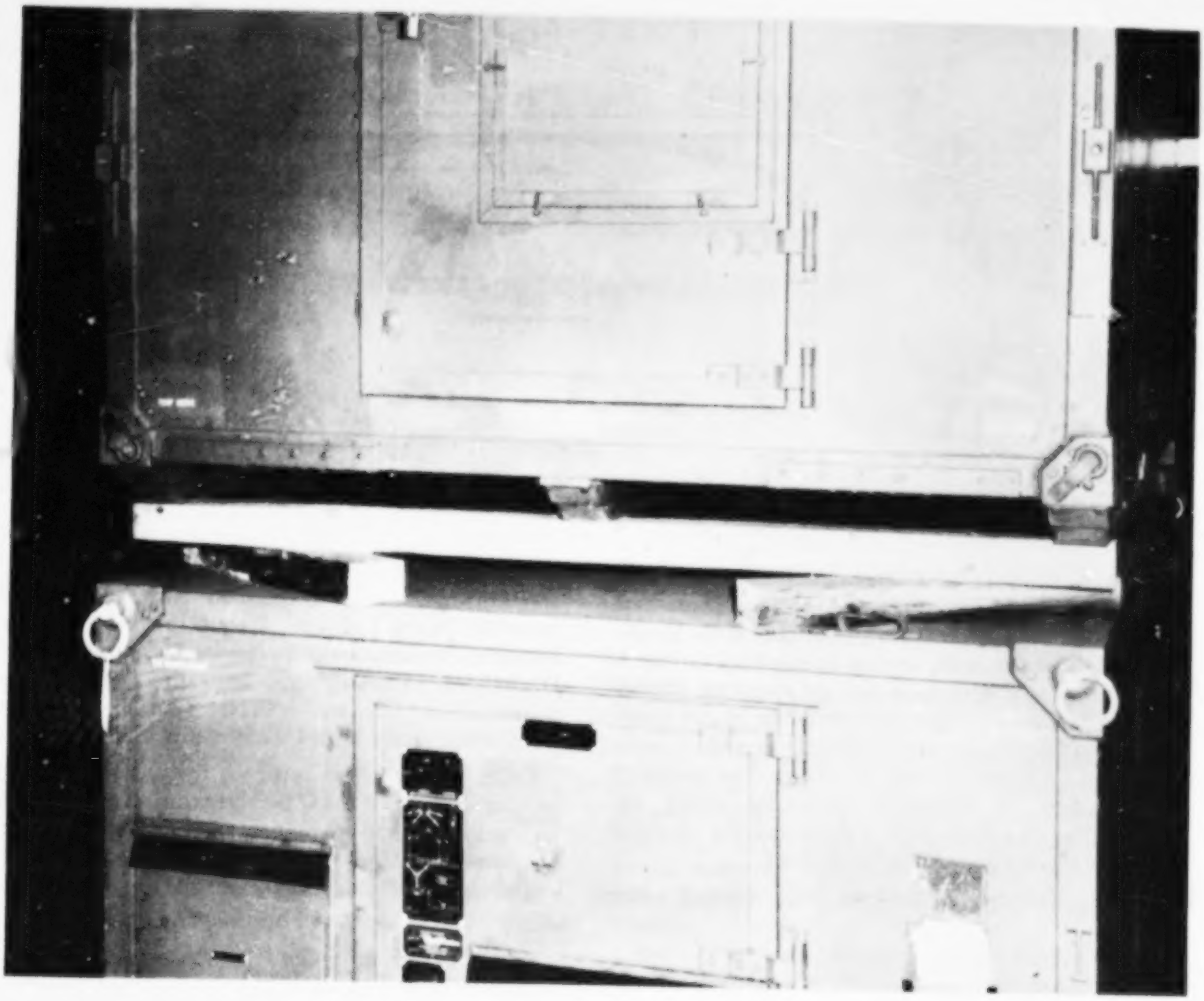


Figure 7. Completed stack.

5.6.25.5.2. Group B shelters will safely support a total weight of 5,400 pounds. These shelters will be stacked utilizing the dunnage pattern shown in figure 6. The corner 4- × 4-inch diagonals will be placed over the roof side and endwalls with each end 20 inches from the corner. Two 4- × 4-inch members will be placed over the end diagonals extending across the skid ends of the stacked shelter. The superimposed shelter will be centered above the shelter beneath. Shelters will be stacked a maximum of 3 high.

5.6.25.5.3. Group C shelters are restricted to two high stacking. They will be stacked utilizing "saddle" dunnage, cut to fit the radius of the roof (fig. 8). This dunnage will be placed as close to the ends as possible.

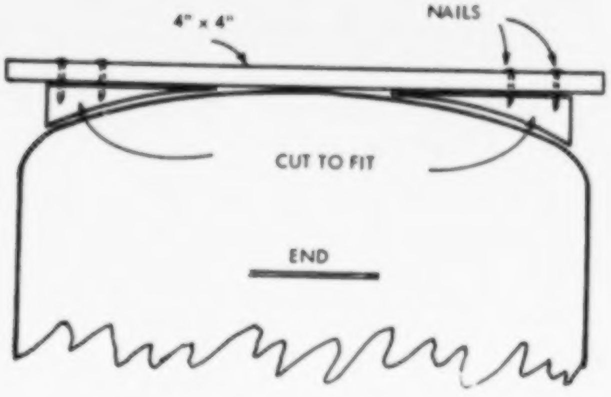


Figure 8. "Saddle" dunnage.

5.6.25.6. Medical (MUST) shelters. Empty MUST shelters will be stacked no more than two high. Two 4- × 4-inch wood members will be placed as close as possible over the ends, similar to stacking Group A shelters, except diagonals are not required. Equipped shelters each weigh approximately 10,300 pounds and will not be stacked without the weight being borne by a supporting rack structure. The nature of construction of sidewalls built for ready accessability and roof with provisions for ducting preclude stacking of equipped shelters.

5.6.25.7. Alternate method of moving and stacking. Intra-depot movement and stacking of shelters may be accomplished with the use of reusable bases (pallets). Requests for drawings covering bases should be forwarded to Director; DARCOM Packaging, Storage, and Containerization Center, ATTN: SDSTO-TO, TO, Tobyhanna Army Depot, Tobyhanna, PA 18466.

5.6.25.8. All shelters returned from the field must be thoroughly inspected for structural damage prior to stacking. Badly damaged shelters should either be stored one high or placed on top of structurally sound shelters if stacking is necessary.

CHAPTER 5

STORAGE OF SPECIAL COMMODITIES

Section VII. Packaged Petroleum Products (Including Containers and Dispensing Equipment)

	Paragraph	Page
General	5.7.1	57-1
Standards for handling 55-gallon drummed petroleum products	5.7.2	57-1
Storage of empty containers	5.7.3	57-1
Inspection	5.7.4	57-1
Dispensing and handling equipment	5.7.5	57-3
Drums, 55-gallon, general information	5.7.6	57-5
Light and heavy products, low flashpoint	5.7.7	57-5
Reports	5.7.8	57-5
Inspection equipment	5.7.9	57-5
Marking	5.7.10	57-5
Inspection criteria for shipment of filled 55-gallon drums	5.7.11	57-5

5.7.1. General

The references for packaged petroleum products are AR 703-1, Petroleum Quality Surveillance and Technical Advisory Program; FM 10-69, Petroleum Handling Equipment and Operations; and MIL-HDBK 201, Petroleum Operations.

5.7.2. Standards for Handling 55-Gallon Drummed Petroleum Products

5.7.2.1. Receiving. Follow general instructions outlined in FM 10-69 and in chapter 3, section I, of this manual.

5.7.2.2. Shipping. Whether shipped by truck or rail, filled drums will be stowed upright in conveyance. If double tiering is necessary, wood dunnage will be used between tiers. Boards (1 by 12 inches) of used or inexpensive lumber are recommended. For additional criteria relative to shipping, see chapter 3, section II, of this manual, and FM 10-69.

5.7.3. Storage of Empty Containers

5.7.3.1. Covered storage. Filled and empty 55-gallon drums may be stored in warehouse or shed facilities. For covered storage, drums may be stacked horizontally or palletized in the vertical position. Stacked drums will be placed horizontally (on sides) with closures (bungs and vents) facing outward and bungs at 3 and 9 o'clock position. Ends of bottom tiers will be braced.

5.7.3.1.1. For convenience of handling and storage, drums may be palletized in the vertical position Either 40- by 48-inch or 48- by 60-inch pallets will be satisfactory.

5.7.3.1.2. For proper identification and quality surveillance, product will be stored in such a manner as to maintain product/grade and batch/lot integrity.

5.7.3.1.3. If drums are multiple-tiered on pallets, a single strap or tape will be applied around each pallet to enhance stability in handling or while in the stack.

5.7.3.1.4. A placard will be prepared and displayed on the outward (aisle side) of each location. The placard will contain the following information: stock number, date of manufacture, batch/lot number, and contract number.

5.7.3.2. Outside storage. Drums stored outside will be stacked or nested horizontally. Filled 55-gallon drums will be stored as outlined in paragraph 5-704, and empty drums in accordance with paragraphs 5-707, DOD 4145.19-R-1.

5.7.4. Inspection

5.7.4.1. Packaged petroleum.

5.7.4.1.1. Packaged petroleum products including prepositioned war reserve stocks (PWRS) in storage at Army depots will be inspected periodically by representatives of the assigned oversea Army Petroleum Command for oversea depots and the US Army General Materiel and Petroleum Activity (USAGMPA) for CONUS depots for quality, condition of packaging, proper storage and handling, and suitability for use, continued storage, and shipment. Storage installation personnel will be responsible for applying receipt inspection and proper storage care and methods as prescribed in chapter 5, section VII, DOD 4145.19-R-1, and as described herein.

5.7.4.1.2. Unpacked filled containers (5- and 55-gallon drums, for example) will be examined for quality, paint/markings condition, rust, mechanical damage, condition of gaskets, and leaks. Bung leaks will be corrected either by tightening bungs or replacing gaskets and bungs as required. Leaking containers which cannot be corrected in this manner, or containers that have lost a significant quantity of content will be removed from the stack and placed in a separate location for corrective action. If the product within the leaking container is known to be suitable for use for the purpose intended, it will be transferred (decanted) to new or suitable containers. If the quality of the product in the leaky containers is unknown, or if the product has been exposed to the elements during handling or storage, this will be reported to the appropriate oversea Army Petroleum Command or CONUS USAGMPA for necessary product quality surveillance.

5.7.4.1.3. Broken outer containers, boxes, or cartons will be repaired or replaced and correct markings perpetuated on new containers.

5.7.4.1.4. Should results of inspection indicate a requirement for corrective action beyond the scope of the local storage activity, a full report will be made (DD Form 1225) showing nature of deficiency and recommended remedial action. Report will be submitted to USAGMPA for CONUS depots or to the appropriate Army Petroleum Command for oversea depots, who will direct or provide disposition instructions.

5.7.4.2. Unfilled petroleum containers.

5.7.4.2.1. Spot inspection will be performed by storage installation inspection personnel upon receipt of containers from any source and at time of shipment.

5.7.4.2.2. Periodically an inspection will be performed by representatives of the cognizant oversea Army Petroleum Command or USAGMPA for CONUS depots. For this inspection, samples will be selected at random. Sampling of 5-gallon cans will be accomplished by selecting bundles (5 cans per bundle) at random. Each can in the bundle will be considered a part of the sample and will be inspected. Sample size will be in accordance with table I, inspection level I, single sampling plan, MIL-STD-105. An acceptable quality level will not be used. Instead, each container in the sample will be examined and the condition reported in accordance with classification cited in paragraph 5.7.4.3.1. USAGMPA will submit a report to HQ, DARCOM (DRSTS-SP), and the storage installation involved. Oversea activities will submit a report to the appropriate office of the Army command headquarters.

5.7.4.2.3. Full (100 percent) inspection will be performed only when directed by the oversea Army Petroleum Command or USAGMPA, as appropriate, and only under direct supervision of a qualified representative of those activities.

NOTE

Refogging of the interior surfaces will be accomplished as deemed necessary in the opinion of the supervising qualified activity representative.

5.7.4.3. Inspection procedure. Whenever a full inspection is directed as a result of conditions found during any spot inspections, the storage depot will make necessary arrangements with the appropriate oversea Army Petroleum Command or USAGMPA to furnish an inspector. When depot inspectors inspect cans under the criteria cited below, the cans determined unfit for issue will be separated and placarded with appropriate identification. DD Form 1225 will be submitted to the owner/manager GMPA, as appropriate, indicating findings.

5.7.4.3.1. Inspection of containers will result in classification to one of the following categories in accordance with criteria shown below by condition code:

5.7.4.3.1.1. Condition code A.

5.7.4.3.1.1.1. Interior free of rust, foreign matter, or emulsion; protective oil film excluded.

5.7.4.3.1.1.2. Exterior free of rust and dents; paint smooth and dree of blemishes or abrasions.

5.7.4.3.1.1.3. Tops or bungs snug and tight fitting when screwed down. Gaskets present and in good shape.

5.7.4.3.1.1.4. Handles free of dents.

5.7.4.3.1.1.5. Present overall appearance is that of new and unused container.

5.7.4.3.1.2. Condition code B.

5.7.4.3.1.2.1. Interior free of loose rust and scale rust. A slight rust stain or pinpoints of rust which adhere to the interior are acceptable.

5.7.4.3.1.2.2. Interior free of foreign matter and emulsion. (Inspect bottom chime closely for foreign matter.)

5.7.4.3.1.2.3. Exterior sound and free from large dents. Small dents which do not weaken the can nor noticeably disfigure it are acceptable.

5.7.4.3.1.2.4. Exterior will be free of excessive rust. Occasional areas of incipient rust are acceptable; however, surfaces of 5-gallon cans and 55-gallon drums must be suitable for application of product markings.

5.7.4.3.1.2.5. Bungs with good gaskets and good handles; air vents in good condition; flange and bung threads undamaged, reasonably free of rust and capable of being tightened properly.

5.7.4.3.1.2.6. Paint in good condition, allowing for normal weathering and showing only slight blemishes or abrasions.

5.7.4.3.1.3. Condition code F.

5.7.4.3.1.3.1. Containers not meeting the condition of condition code A or B will be classified as condition code F if they can be satisfactorily repaired to condition B within the repair limitations prescribed in AR 750-428.

5.7.4.3.1.4. Condition code H.

5.7.4.3.1.4.1. Drums and cans not meeting the requirements of condition codes, A, B, or F will be reported as excess except that those obviously salvage will be disposed of as scrap metal.

5.7.5. Dispensing and Handling Equipment

5.7.5.1. Inspection and storage criteria.

5.7.5.1.1. Pumps, barrel, rotary.

5.7.5.1.1.1. Type of storage: Unheated warehouse, away from radiators, steam pipes, or heating units.

5.7.5.1.1.2. Frequency of inspection: Every 3 years.

5.7.5.1.1.3. Procedure: Examine items for apparent corrosion on all moving parts (handle assembly, piston plunger, and leather washer), rust or oxidation, disintegration of interior of hose, including deterioration of couplings and fittings.

5.7.5.1.2. Pumps, service station type.

5.7.5.1.2.1. Types of storage: Unheated warehouse, away from radiators, steam pipes, or heating units.

5.7.5.1.2.2. Frequency of inspection: Every 3 years.

5.7.5.1.2.3. Procedure.

5.7.5.1.2.3.1. Examine metallic surfaces for oxidation or corrosion.

5.7.5.1.2.3.2. Examine vacuum rotary pump, electric motor, valves, and attachments for deterioration.

5.7.5.1.2.3.3. Examine hose couplings, fittings, and locking device for deterioration, exterior and interior.

5.7.5.1.2.3.4. Inspect pump hose for rusting bolts.

5.7.5.1.2.3.5. Inspect spare parts kit for deterioration of container, moisture proofing, and oil proofing.

5.7.5.1.3. Pumps, gasoline dispensing.

5.7.5.1.3.1. Type of storage: Unheated warehouse, stored away from radiators, steam pipes, and heating units.

5.7.5.1.3.2. Frequency of inspection: Every 3 years.

5.7.5.1.3.3. Procedure.

5.7.5.1.3.3.1. Examine the tubular frame and base for deterioration, such as rust, oxidation, and other damage.

5.7.5.1.3.3.2. Examine engine for deterioration of moving parts.

5.7.5.1.3.3.3. Examine pump for deterioration of moving parts.

5.7.5.1.3.3.4. Examine all rubber hoses for deterioration of exterior and interior surfaces including male and female couplings and nozzles.

5.7.5.1.3.3.5. Examine fire extinguishing equipment.

5.7.5.1.3.3.6. Examine tool box and spare parts for rust, oxidation, or other damage.

5.7.5.1.4. Pumping assembly, flammable liquid, bulk transfer. This item will be inspected for a rusting condition in the pump assembly (nonsparking tools will be used). If rust is found, it will be corrected by the following procedure:

5.7.5.1.4.1. Detach the pump body from the gasoline engine and base.

5.7.5.1.4.2. Detach the body of the suction check valve (flapper valve) from the pump body. Separate the rubber combination gasket and flapper from the body. Remove the 1-1/2 inch male-quick coupling from the body.

5.7.5.1.4.3. Remove the impeller from the shaft.

5.7.5.1.4.4. Remove any corrosion (rust) adhering to the surfaces of rubber gasket-flapper by scraping gently with the edge of a flat blade. Any corrosion on the weight can be removed with a wire brush.

5.7.5.1.4.5. Remove any rust on the housing flange (exposed by removing the impeller) with a fine emery cloth. Coat-clean surfaces by brushing with aromatic fuel resistant lacquer.

5.7.5.1.4.6. Remove the rust from the body of the check valve and the impeller with any available type of rust removing compound.

NOTE

There are a number of rust removing compounds available, using either phosphoric acid or hydrochloric acid as a base. A good commercial type rust remover would be adequate for this purpose and should be used in accordance with the supplier's instructions. These compounds usually work much faster when heated to approximately 150° F.

5.7.5.1.4.7. When all rust has been removed, rinse the metal parts thoroughly in warm water. The rinse must completely remove all residue.

5.7.5.1.4.8. Place parts in a drying oven heated to 180° F., or above.

5.7.5.1.4.9. Plug threaded holes in impeller and body to prevent coating of threads with lacquer. (If lacquer coating on threads does not present a problem in reassembly, this step may be omitted.)

5.7.5.1.4.10. While the parts are still warm, dip them into aromatic fuel-resistant lacquer. The lacquer will be thinned by mixing five volumes of the lacquer with three volumes of ethyl acetate. The lacquer will conform to the requirements of MIL-L-6047 Lacquer, Aromatic, Fuel Resistant. This lacquer may be procured from any of the suppliers listed in QPL-6047.

5.7.5.1.4.11. Air dry parts.

NOTE

> The coated suction check valve body must be thoroughly dry before assembly with the combination rubber gasket and weighted flapper.

5.7.5.1.4.12. Reassemble the pumping assembly. Any enamel removed or damaged will be replaced or touched up with enamel of the same type and color as the original coating.

5.7.5.1.4.13. No further preservation of the pump is required. The balance of the pumping assembly, including the gasoline engine, will be inspected and represerved in accordance with the requirements of MIL-P-3230.

5.7.5.1.5. Hose, gasoline.

5.7.5.1.5.1. Frequency of inspection: Annually.

5.7.5.1.5.2. Procedure.

5.7.5.1.5.2.1. Examine for apparent deterioration of exterior and interior, such as dry rot, disintegration of fabric and rubber, and splits and holes.

5.7.5.1.5.2.2. Check metal fittings for corrosion.

5.7.5.1.6. Collapsible containers for petroleum products.

5.7.5.1.6.1. Type of storage: Dark, cool, well ventilated areas, away from radiators, steam pipes, and heating units.

5.7.5.1.6.2. Frequency of inspection: New—after fourth year in storage and every 18 months thereafter. Used—annually.

5.7.5.1.6.3. Procedure.

5.7.5.1.6.3.1. Inspect for bloom or mold, a white cloudy surface coating resulting from certain chemicals used in the manufacture of neoprene cells, caused by moisture or temperature changes while in storage.

5.7.5.1.6.3.2. Check for evidence of cracking from sharp folds or creases.

5.7.5.1.6.3.3. Check for separation or blisters along splices or seams, reinforcing patches and hand loops.

5.7.5.1.6.3.4. Check for brittleness or cracking of exterior interior surfaces.

5.7.5.1.6.3.5. Check for rust or corrosion of metal parts.

5.7.5.1.6.3.6. Check for mold or mildew of ground cloth.

5.7.5.1.6.3.7. Check for condition and completeness of repair kit.

5.7.5.1.6.3.8. In addition, used containers should be inspected for sludge, fumes, or evidence of dryness or brittleness of the interior, wear on tie ropes, numerical completeness of tie ropes, cuts or abrasions on the exterior, and rents or tears in the ground cloth.

5.7.5.1.6.3.9. Check access bolts, filler assembly outlet fitting, and valve for corrosion and rust.

5.7.5.1.6.3.10. Examine inner cells at all points where bolts connect the inner cell to the canvas housing for splits or cracks in the inner cell or tears in the canvas.

5.7.5.1.6.3.11. Check all canvas thoroughly for tensile strength and evidence of moisture or mildew deterioration.

5.7.5.1.6.3.12. Check all repair kits, tools, and spare parts for deterioration.

5.7.5.1.6.3.13. Check all rigid supports, wooden housings, and frames for completeness or signs of deterioration.

5.7.5.1.6.4. Care and preservation techniques.

5.7.5.1.6.4.1. Bloom and mold. Wash cell with solution of two parts water to one part vinegar. Dry thoroughly. When necessary to wash interior of cell, saturate interior with light coating of engine oil (SAE 10) after drying to prevent cracking.

5.7.5.1.6.4.2. Cracking. Repair minor cracking from kit using standard repair procedure outlined in TM 10-1130. In cases of extensive and general embrittlement or cracking, container should be disposed of under existing regulations.

5.7.5.1.6.4.3. Separations. Replace individual patch separation using standard repair procedure. (See TM 10-1130.) Buff thoroughly and repair slight seam separation. Dispose of container in accordance with current regulations when separation is general throughout the container.

5.7.5.1.6.4.4. Blister. Ignore if one-half by one-half inch or smaller and few in number. Repair, using standard repair procedure, when blisters are larger than one-half by one-half inch and several in number. When blisters are many and large, indicating dry rot, dispose of container in accordance with current regulations.

5.7.5.1.6.4.5. Rust and corrosion. Areas of rust and corrosion on metal components should be cleaned and treated with a rust-preventive compound prior to return to storage. Threaded inserts or bolts damaged beyond use should be replaced.

5.7.5.1.6.4.6. Mold or mildew on ground cloth. Brush off if light. When heavy, wash off with solution of two parts water to one part vinegar. Air dry the cloth thoroughly prior to return to storage.

5.7.5.1.6.7. Incomplete repair kits. Replace incomplete kits or missing components.

5.7.5.1.6.4.8. Sludge in containers. Wash interior in soapy water and rinse with Stoddard solvent to prevent cracking. Coat interior with light engine oil (SAE 10) to render pliable. Be sure all residue is expelled after each operation.

5.7.5.1.6.4.9. Dry, stiff, or brittle interiors. Rinse with Stoddard solvent and coat with light engine oil, as described above.

5.7.5.1.6.4.10. Cuts, holes, or abrasions. Abrasions of such nature as to weaken the cell, if not numerous or excessive in size, should be repaired. Cuts or holes, if small in number and not exceeding 3 by 6 inches in size, may be repaired. When the number is large and holes are in excess of above dimensions, dispose of container under current regulations.

5.7.5.1.6.4.11. Fumes. Wash with soapy water and rinse with Stoddard solvent. Coat interior with light engine oil (SAE 10). Expell all residue after each operation.

5.7.5.1.6.4.12. Rents or tears in ground cloth. Patch when not numerous or not exceeding 3 by 6 inches in area. When extensive, dispose of ground cloth under existing regulations.

5.7.5.1.6.4.13. Tie ropes. Replace if frayed, weakened by use, or missing.

5.7.5.1.7. Fuel tanks, 750-gallon capacity.

5.7.5.1.7.1. Type of storage: Dry unheated warehouse, stored away from heaters and steam pipes.

5.7.5.1.7.2. Frequency of inspection: Every 18 months.

5.7.5.1.7.3. Procedure.

5.7.5.1.7.3.1. Check exterior of tank for oxidation, corrosion, or other deterioration.

5.7.5.1.7.3.2. Examine outlet valves for condition.

5.7.5.1.7.3.3. Examine dome covers for condition of threads.

5.7.5.1.7.3.4. Examine interior with inspection light for rust or other contamination.

5.7.5.1.7.3.5. Check skids for condition and tightness.

5.7.5.2. Disposition of stocks.

5.7.5.2.1. Condition code A and condition code B will be returned to stock in issue accounts.

5.7.5.2.2. Unserviceable uneconomically reparable items will be reported as excess or processed to the Property Disposal Officer as salvage, whichever is appropriate.

5.7.6. Drums, 55-Gallon, General Information

Consideration should be given, when filling drums, to gauge of drum and density of product. For example, 16- and 18-gauge, tight head 55-gallon drums, procured under PPP-D-729, have a greater fill capacity than those procured under previous specifications. Because of this, an increase in fill capacity has been adopted for the new drums, i.e., 54 gallons net for light products; 55 gallons net for heavier products.

5.7.7. Light and Heavy Products, Low Flashpoint

Listed below are light products considered to have a flashpoint at, or below, a temperature of 80° F.

5.7.7.1. Gasoline, automotive, VV-GG-76.

5.7.7.2. Gasoline, automotive, Types I and II, MIL-G-3056.

5.7.7.3. Gasoline, aviation, grades 80, 91/96, 100/130, and 115/145, MIL-G-5572.

5.7.7.4. Jet fuel, JP-3 and JP-4, MIL-J-5624.

5.7.7.5. Thinner, synthetic, resin enamel.

NOTE

Heavier products are listed in Federal Supply Catalog C9100-IL.

5.7.8. Reports

5.7.8.1. In CONUS, the DD Form 1225 covering inspection of petroleum products, drums and containers, or dispensing equipment wil be prepared in original and four copies and distribution as follows:

Original and one copy to ICP.

One copy to US Army Petroleum Center.

One copy to appropriate petroleum division/office.

One copy will be retained by the preparing depot or storage division.

Letters of transmittal are not necessary.

Reports covering "full inspection" will be signed by both the petroleum inspector and the depot inspection specialist.

5.7.8.2. In oversea locations, reports will be prepared and distributed in accordance with instructions issued by the cognizant Army Petroleum Command.

5.7.9. Inspection Equipment

All inspectors will be equipped with explosion-proof lights for examining the interior of containers.

5.7.10. Marking

To avoid unnecessary reinspection, each lot or stack of drums, 5- and 55-gallon, filled or unfilled, that has been inspected will be marked with date of inspection and depot identification symbol.

5.7.11. Inspection criteria for shipment of filled 55-gallon drums.

5.7.11.1. Table 1 shows the minimum standards of serviceability for filled, non-leaking 55-gallon drums selected from stock for shipment to military users.

5.7.11.2. Leaking drums are automatically unserviceable.

TABLE 1

MINIMUM STANDARDS OF SERVICEABILITY FOR FILLED 55-GALLON DRUMS*

Part	General Requirements	Dents Allowed	Creases Allowed	Condition of Exterior Surfaces of Metal Allowed
Body	a. Numerous small dents are acceptable. b. Condition of paint of no importance. (If it has no effect on the marking).	a. Up to 2" in depth if not more than four dents in body. b. Not to exceed 10" length and must not go into the chime or hoop.	a. No creases allowed within 3" of the side weld. b. Creases must not exceed 1/2" in depth and 4" in length.	Must be free of severe pitting that would weaken drum structure.
Chime	Must be tight on both types of drums. Reinforcing metal strips should be in place on 16-gage drums. No indication of separation.	16-gage. No greater than 1/4" in depth with no restriction on length or number. 18-gage and thinner None greater than 3/4" in depth with no more than four dents per chime.	Must not exceed 1/4"	See information for body, above.
Cap/ Flange	No defective threads, gasket seat, or weld.	None	None	Moderate rusting if gasket seat and threads are not impaired.
Head	Must be restorable to approximate original contour. Markings must be legible	Up to 1" in depth or height if not more than two dents per head and not than 5" in length.	None	See information for body, above.
Hoops	Must be approximately in original shape.	None greater than 5/8" in depth. No limitation in number if less than 5/8" in depth.	None	See information for body, above.
Side Weld	No indication of cracking or deterioration.	Up to 1" in depth, not to exceed three dents per weld.	None	See information for body, above.

*Drums not meeting the minimum standards should have the contents transferred into serviceable drums. See FM 10-69 for instructions in drum pumping operations.

CHAPTER 5

STORAGE OF SPECIAL COMMODITIES

Section X. NONDEPARTMENT OF DEFENSE-OWNED STOCKS

	Paragraph	Page
Policy	5.10.1	510-1
Strategic and critical (S and C) material	5.10.2	510-1
Office of Civil Defense (OCD) material	5.10.3	510-2

5.10.1. Policy

The storage and handling of nonDepartment of Defense-owned stocks is a mission assignment of those Department of the Army installations designated as storage sites for this property. The attention granted these stocks by storage managers in proper receipt, protection, handling, shipping, and accounting will be on the same level as that granted other mission stocks under their physical custody.

5.10.2. Strategic and Critical (S and C) Material

5.10.2.1. Definitions. The following definitions are applicable to the contents of this section.

5.10.2.1.1. Security. The in-storage protection of strategic and critical materials which have physical security interest by reason of their security classification or special significance to mobilization programs; i.e., strategic value, replacement factors, dollar value, and effect on production and delivery schedules if lost or destroyed.

5.10.2.1.2. Special projects. Those tasks or jobs not accomplished during normal receiving, storage, or shipping activities as stipulated in the Strategic and Critical Material Storage Manual; i.e.; spraying; etc.

5.10.2.2. Responsibilities.

5.10.2.2.1. The Commanding General, AMC, has operating staff responsibility for receipt, storage, and shipment of stockpile strategic and critical materials at Department of the Army depots, plants, and arsenals.

5.10.2.2.2. Commanders of Department of the Army depots, plants, and arsenals, designated as storage points for General Services Administration, GSA, strategic and critical materials, are responsible for proper receipt, storage, and issue of these materials, in accordance with the provisions of the GSA Strategic and Critical Materials Storage Manual, applicable AR's, and other directives issued by Headquarters, AMC.

5.10.2.2.3. The General Services Administration is responsible for procurement, movement, and overall control of stockpiled strategic and critical materials, for issuance of shipping instructions, obtaining space allocations for storage of strategic and critical materials from AMC, approval of shipping schedules, and provisions of funds for financing handling and storage costs incidental to the program, including special projects.

5.10.2.3. Rewarehousing.

5.10.2.3.1. Rewarehousing of strategic and critical materials will not be performed without prior authorization by AMC. AMC will obtain GSA approval prior to authorizing rewarehousing at storage points. However, in cases of emergency, when safety of personnel or protection of materiel is paramount, required rewarehousing may be accomplished and AMC, ATTN: AMCSU-BS, immediately advised.

5.10.2.3.2. Whenever rewarehousing of S&C materials for the convenience of the Department of the Army is accomplished, the costs will be borne by the storage installation. Whenever rewarehousing is deemed necessary for any other purpose, a request for it will be forwarded to AMC, ATTN: AMCSU-BS, together with DA Form 1610-R, (Estimate and Cost Statement—Strategic and Critical Raw Materials Special Projects (LRA)), as prescribed in AR 740-1.

5.10.2.4. Damage to S and C Material. In the event damage occurs to strategic and critical materials, other than that occurring as a result of normal storage or item characteristics, such as fire, flood, washout, collapsed roofs, or other similar incident, the depot Commander will notify the following:

5.10.2.4.1. AMC, ATTN:AMCSU-BS.

5.10.2.4.2. General Services Administration, Defense Materials Service, Washington, DC 20315.

5.10.2.4.3. Appropriate General Services Administration regional director.

5.10.2.4.4. Notification will be by wire or telephone immediately after the mishap, and a full written report will be submitted as soon as practicable.

5.10.2.5. Storage Procedures Strategic and Critical Material.

5.10.2.5.1. Material in open storage will not bear identification of such size as to be legible from outside the installation.

5.10.2.5.2. Installations will not receive or store any strategic and critical material of the GSA prior to receipt of space allocation from AMC.

5.10.2.5.3. At any time it becomes evident to storing installations that space allocations are overoccupied, or are apt to be, prompt notification will be furnished AMC, ATTN: AMCSU-BS.

5.10.2.5.4. Unsatisfactory storage conditions, deteriorating materials or containers, insect infestation, erosion; etc., will be reported to inspectors of the GSA and to AMC, ATTN: AMCSU-BS with recommendations for corrective measures. Cost estimates to correct deficiencies will be prepared on DA Form 1610-R (AR 740-1) and submitted to AMC, ATTN: AMCSU-BS.

5.10.2.5.5. Projects requiring special construction or alteration will be handled on an individual basis with AMC, with instructions being issued by AMC to the storing installation upon GSA approval of project.

5.10.2.6. Records and Reports.

5.10.2.6.1. The records and reports prescribed in the GSA Strategic and Critical Materials Storage Manual will be accomplished and maintained by storage installations.

5.10.2.6.2. Space allocations and usage will be reflected on DD Form 805 (Storage Space Utilization and Occupancy Report) as specified in AR 740-1.

5.10.3. Office of Civil Defense (OCD) Material

5.10.3.1. Responsibilities.

5.10.3.1.1. The Commanding General, US Army Materiel Command has operating staff responsibility for:

5.10.3.1.1.1. Receipt, storage, maintenance, and shipment of materials for the account of OCD at Department of the Army depots, plants, and arsenals.

5.10.3.1.1.2. Allocation of space to OCD and notification to installation commanders of amount and type of space allocated.

5.10.3.1.2. Director, Defense Supply Agency, DSA, is responsible for:

5.10.3.1.2.1. Obtaining space allocation from AMC for the storage of property owned by OCD.

5.10.3.1.2.2. Directing shipment, delivery or disposition of OCD materials stored in AMC installations.

5.10.3.1.2.3. Periodic inspections of OCD owned property as deemed appropriate.

5.10.3.1.2.4. Providing funds for normal handling of OCD owned property and for special projects applicable to such property.

5.10.3.1.3. Commanders of depots, or other installations, having custody of OCD owned materials are responsible for:

5.10.3.1.3.1. Receipt, storage, care and shipment of OCD property as directed by AMC and DSA.

5.10.3.1.3.2. Assisting OCD/DSA personnel as required, in performing periodic inspections of OCD owned property.

5.10.3.1.3.3. Performing rewarehousing of OCD property, as required, and as authorized by AMC. "After the fact" authorization may be obtained in case of emergency rewarehousing required due to safety or health considerations.

5.10.3.2. Storage Procedures OCD Material.

5.10.3.2.1. Space allocations and usage will be reflected on DD Form 805 (Storage Space Utilization and Occupancy Report) as specified in AR 740-1.

5.10.3.2.2. OCD material will be stored in allocated space and will not be commingled with military property or stored adjacent to classified stocks.

5.10.3.2.3. Except for such routine matters as reporting of shipments and receipts, lack of required documentation, and information regarding shipping schedules, personnel at storing installations will not engage in direct communication with civilian concerns or offices regarding material stored for the account of the Office of Civil Defense.

5.10.3.2.4. All documents required for and pertinent to movement of OCD material will be furnished the storage installation by DSA. Lack of identifying or necessary documentation in this regard will be brought to the attention of DSA.

5.10.3.2.5. OCD material received at installations with visible evidence of damage or deterioration or lack of proper preservation will be placed in storage and an estimate of costs (man-hours and material) required to correct the deficiencies will be forwarded to AMC, ATTN: AMCSU-BS, for reference to DSA for approval of the project and allocation of funds.

5.10.3.2.6. Necessary records to be maintained and/or forwarded by USASMC installations in connection with OCD material will be in accordance with operating memoranda prepared by DSA and approved by AMC, ATTN: AMCSU-BS.

5.10.3.3. Inspection, Surveillance and Disposition.

5.10.3.3.1. Surveillance will be accorded OCD material as to like items of Army material to include assurance as to:

5.10.3.3.1.1. Protection against elements, fire, and theft.

5.10.3.3.1.2. Storage in accordance with item characteristics and requirements.

5.10.3.3.1.3. Readiness for purpose for which intended, to include exercising and/or maintenance as directed by OCD operating instructions.

CHAPTER 5

STORAGE OF SPECIAL COMMODITIES

Section XI. ARMY AIRCRAFT AND COMPONENTS

	Paragraph	Page
Purpose	5.11.1	511-1
Receipts	5.11.2	511-1
Storage	5.11.3	511-1
Care and preservation	5.11.4	511-2
Classification and modification	5.11.5	511-2
Disposition of helicopter blades	5.11.6	511-4
Shipment of aircraft and components	5.11.7	511-4

5.11.1. Purpose

This section includes instructions and guidelines for use by Army storage activities in the receipt, storage, and issue of Army aircraft and components.

5.11.2. Receipts

As soon as possible, and in no case later than concurrent with the issuing instructions to the shipping activity, storage locations will be furnished advice of aircraft scheduled for delivery. Storage activities will process aircraft receipts with the assistance of technical inspectors of the aircraft maintenance activity when classifying items to the appropriate condition code. Processing of aircraft will include the following:

5.11.2.1. Technical inspection of aircraft in accordance with aircraft inspection requirements delineated in the multiple parts manual for each specific type aircraft.

5.11.2.2. An examination, for accuracy, of the Aircraft Inventory Record, DA Form 2408-17 (TM 38-750). Insurance that the file of publications conforms to the standards established by AR 750-31.

5.11.2.3. Establishment of appropriate security measures when classified equipment is left installed on aircraft in storage.

5.11.2.4. Classification of aircraft in the proper condition code.

5.11.2.5. Processing of certified receiving document correctly condition coded for entry on inventory record, as required.

5.11.2.6. Preservation of aircraft for flyable, temporary, or extended storage.

5.11.3. Storage

5.11.3.1. Definitions.

5.11.3.1.1. Aircraft in Storage. Serviceable and unserviceable aircraft, fixed and rotary wing, which are reflected on inventory control point stock record accounts.

NOTE

> The length of time the aircraft will be inactive and the manpower available will determine which of the following categories of storage will be used.

5.11.3.1.2. Flyable storage. A type of storage utilized when maintaining aircraft in operable condition. (The procedures prescribed for use during this type storage are designed to keep stored aircraft in the best possible condition next to daily use.)

5.11.3.1.3. Short term storage. Storage of aircraft up to 45 days during which time little attention is required.

5.11.3.1.4. Intermediate storage. Storage of aircraft which are to be inactive for more than 45 days but not exceeding 180 days.

5.11.3.1.5. Selected Condition Component. Any component or accessory requiring accumulation and maintenance of historical data. (Depicted in TB 55-1500 307-25).

5.11.3.1.6. Finite Fatigue Life Accessory (commonly referred to as retirement life components). A component or accessory for which a maximum accrued operating time (hours or calendar period) has been established. (See AR 310-25 Dictionary of U.S. Army Terms, "Time Change Component.")

5.11.3.1.7. Time Change Accessory (commonly referred to as TBO components). A component or accessory for which a maximum accrued operating time (hours) between complete overhauls has been established. (See AR 310-25.)

5.11.3.2. Storage Factors.

5.11.3.2.1. Serviceable aircraft will be maintained while in flyable, short term, or intermediate storage.

5.11.3.2.2. Flyable, short term, or intermediate storage to be afforded aircraft will be determined by the inventory control point, according to the known requirements for the aircraft. The information will be furnished, by specific serial number, to the storage installation.

5.11.3.2.3. Unserviceable aircraft, fixed and rotary wing, including crash-damaged aircraft, will be maitained in short term storage pending receipt of disposition instructions from the inventory control point.

5.11.3.2.4. Available controlled humidity (CH) space may be used at the discretion of the storage activity commander, as an interim measure, pending processing and preservation of aircraft for intermediate storage. Refer to paragraph *5.11.4.10* for additional comment on CH storage application.

5.11.3.2.5. TM 55-1500-204-25/1 and the applicable organizational maintenance manual provide specific instructions pertaining to the storage of reciprocating powered engine aircraft. The storage of turboshaft powered aircraft is contained in the applicable organizational maintenance manual. These manuals also specify the requirements for processing for storage, inspection, and maintenance while in storage, processing from storage to active status, procedure for preparing aircraft for disposal, and also detailed procedures for parking and mooring aircraft.

5.11.4. Care and Preservation

5.11.4.1. General. Stored aircraft will be periodically inspected for adequacy of preservation and storage conditions. In the event the prescribed type of storage of aircraft is changed by direction of the inventory control point, the aircraft will be reprocessed to the appropriate state of preservation in accordance with TM 55-1500-204-25/1 and the applicable organizational maintenance manual.

5.11.4.2. Reciprocating Aircraft Engines. Inspection, preservation, packing, storage, and shipping requirements and procedures for installed and spare engines, serviceable and unserviceable, are specified in TM 55-1500-204-25/1, MIL-E-6058 and the applicable organizational maintenance manual.

5.11.4.3. Corrosion Control for Aircraft. TM 55-1500-204-25/1 provides detailed methods for the prevention and combating of corrosion in aircraft structures.

5.11.4.4. Engines, Aircraft, Gas Turbines. MIL-E-5595 and the applicable organizational maintenance manual provide instructions for care and preservation of gas turbine aircraft engines.

5.11.4.5. Elastic Shock Absorber and Exerciser Cords. TM 55-1500-204-25/1 provides instructions for identification, inspection, testing, and storage of these items.

5.11.4.6. Carburetors, Fuel Pumps, and Injection Systems. TM 1-6R-1-3 series provide instructions for preparation of carburetors, direct fuel injection pumps, and direct fuel injection systems for storage and for use after storage.

5.11.4.7. Aircraft Instruments. Policies governing the inspection, maitenance, storage and shipment of all aircraft devices, instrument maintenance parts, and associated items are set forth in TM 55-1500-204-25/1.

5.11.4.8. Fuel Tanks. TM 55-1500-204-25/1 provides instructions governing the storage, inspection, repair, preservation, and packing of external fuel tanks both serviceable and repairable.

5.11.4.9. Painting and Marking of Army Aircraft and Surveillance Drones. This will be accomplished during scheduled depot maintenance cycles, as prescribed in TB 746-93-2.

5.11.4.10. Controlled Humidity Storage.

5.11.4.10.1. Aircraft items requiring consideration for controlled humidity storage, priorities, criteria; etc., applicable thereto, are subject to paragraphs 3-10.1 through 3-10-7.

5.11.4.10.2. Aircraft items in mobilization reserve and special accounts will be given priority for controlled humidity storage.

5.11.5. Classification and Modification

5.11.5.1. Normally, aircraft items in storage or received as returns are subject to the following condition classification assignments authorized in AR 725-50. However, the following criteria applies to items defined above in paragraphs *5.11.3.1.6* and *5.11.3.1.7*.

5.11.5.1.1. Classification of returns of TBO and retirement life components with established replacement or retirement time:

Classification (Condition Code)	Maximum time of over 500 hours	Maximum time of 500 hours or less
A	Serviceable TBO and retirement life components with zero time only.	Serviceable TBO and retired life components with zero time only.
B	Serviceable TBO and retirement life components with less than 100 percent but more than 200 hours remaining life.	Serviceable TBO and retirement life components with less than 100 percent but more than 100 hours remaining life.
	NOTE Unserviceable TBO and retirement life components with less than 100 percent but more than 200 hours remaining life, and which can be made serviceable with minimum disassembly will be repaired, reclassified as serviceable and assigned condition code B.	NOTE Unserviceable TBO and retirement life components with less than 100 percent but more than 100 hours remaining life, and which can be made serviceable with minimum disassembly will be repaired, reclassified as serviceable and assigned condition code B.
F	TBO serviceable and unserviceable components with less than 200 hours remaining life will be classified as repairable, and will be subjected to complete overhaul.	TBO serviceable and unserviceable components with less than 100 hours remaining life will be classified as repairable and will be subjected to complete overhaul.
H	Retirement life serviceable and unserviceable components with less than 200 hours remaining life will be classified as scrap.	Retirement life serviceable and unserviceable components with less than 100 hours remaining life will be classified as scrap.

5.11.5.1.2. Condition code D will be assigned to serviceable items that must be modified to the latest configuration before issue.

5.11.5.1.3. Condition code J (unclassified) will be assigned pending classification of items to other actual conditions.

5.11.5.1.4. Condition code M, when assigned, will signify repair has been scheduled by an Army or DOD maintenance facility.

5.11.5.2. Normal procedures for documentation for purposes of stock records adjustment in cases of reclassification will also apply in reclassification of aircraft and aircraft components. The following additional instructions will be observed:

5.11.5.2.1. Serviceable aircraft engines received from overhaul facility will be classified as condition code A.

5.11.5.2.2. The receipt of items from the US Army Aeronautical Depot Maintenance Center, in serviceable condition after maintenance repair overhaul, will be reported to the inventory control point by condition code as a "change in location."

5.11.5.2.3. Storage activities having on hand or receiving time change and selected conditions components not accompanied by DA Form 2410 will:

5.11.5.2.3.1. Place component in unclassified condition code K.

5.11.5.2.3.2. Request DA Form 2410 from the last consignor, if known. If unknown, request disposition instructions from AVSCOM.

5.11.5.2.4. Aircraft accounted for in AVSCOM stock record account(s) that are determined to be uneconomically repairable will be reported for disposition instructions as prescribed in TB 750-99-15.

5.11.5.2.5. Where disposition instructions direct disposal action, the nameplate of the aircraft will be mutilated in accordance with instructions in TB 750-99-15 within 20 calendar days from the receipt of disposition instructions.

5.11.5.2.6. In the event the nameplate has been lost or multilated beyond recognition, a certification will be made on the turn-in document and on the aircraft DA Form 2408-15, in accordance with instructions in TB 750-99-15.

5.11.5.2.7. The requirements of paragraph 5.11.5.2.5. above will not affect the disassembly of salvage aircraft by maintenance shops. The disassembly process may continue in accordance with established production schedules.

5.11.5.3. The responsibility of storage elements for condition classification of stocks includes the recognition of requirements for modifications as published in Department of the Army technical manuals.

5.11.5.3.1. When preissue inspection reveals that an item has not been modified to the latest configuration, items will be withheld from issue unless a waiver is authorized. Action to modify will be initiated by the storage activity through work orders issued to the aircraft maintenance shop.

5.11.5.3.2. In the instance of aircraft or components requiring modification only, the responsible manager of the storage activity will initiate a work order to the aircraft maintenance shop for performance of the required modification on an expedited basis. Work orders in this category do not require the approval of the inventory control point.

5.11.5.3.3. Aircraft stored which are serviceable and flyable, but require modification only, will be classified as condition code D.

5.11.5.3.4. When modification has been accomplished, the storage activity will provide the inventory control point with appropriate adjustment documents to reflect the current condition code.

5.11.6. Disposition of Helicopter Blades

5.11.6.1. Installations having responsibility for storage and shipment of helicopter main and tail rotor blades will be guided by the following instructions.

5.11.6.1.1. All rotor blades will be inspected by the storage activity at time of receipt.

5.11.6.1.2. Inspections will be accomplished with the assistance of technical maintenance inspectors as required.

5.11.6.1.3. Inspections will be made to determine the following:

5.11.6.1.3.1. Extent and degree of damage.

5.11.6.1.3.2. Availability of historical record.

5.11.6.1.3.3. Amount of finite life remaining.

5.11.6.2. If historical records are not available, an inquiry for records will be made to the activity from which the blade(s) was shipped. If the activity cannot provide the records, a request for disposition instructions for the blade will be submitted to the inventory control point.

5.11.6.3. Blades that meet or exceed the maximum allowable operating time limitations as assigned by the applicable technical manual will be salvaged on site.

5.11.6.4. Blades that have 200 hours or less remaining of the maximum allowable operating time will be reported to the inventory control point for disposition instructions.

5.11.6.5. Blades that are broken, severely bent, distorted or otherwise obviously damaged to the extent that damages exceed authorized repair limitations will be condemned and salvaged on site.

5.11.6.6. Reusable containers for rotor blades that have been condemned will be returned to storage unless determined to be uneconomically repairable.

5.11.7. Shipment of Aircraft and Components

5.11.7.1. Movement Schedules. Movements of Army aircraft will be directed by the inventory control point by specific serial number. Scheduled movement of aircraft will be based on estimated delivery date of aircraft, as reported on aircraft maintenance shop and contractor repair schedules. Movement orders will be controlled by an aircraft transportation control number (movement order).

5.11.7.2. Processing for Shipment.

5.11.7.2.1. Advance notification will be furnished by the inventory control point to the storage location of proposed shipment of aircraft to permit quipment processing to meet assigned transportation date.

5.11.7.2.2. Advance information will include requirements for special equipment, special marking, packing and crating instructions; etc.

5.11.7.2.3. Storage locations will furnish the inventory control point notice of availability upon completion of processing of aircraft for movement.

5.11.7.2.4. Upon receipt of notice of availability of aircraft, the inventory control point will furnish a firm shipment order to the storage location. All arrangements for flight crews for CONUS movement of aircraft will be made by the inventory control point.

5.11.7.2.5. The appropriate oversea commander will specify the requirements in these cases for his particular area of command.

5.11.7.2.6. Appropriate technical publications and instructions will be included with aircraft and equipment at the time of shipment.

5.11.7.2.7. Shipping documents requiring the shipment of a single rotor blade will be honored for those rotor systems not requiring shipment in matched sets.

5.11.7.2.7.1. If two unmatched blades are packed in a container, one blade will be removed for issue.

5.11.7.2.7.2. Blades removed from containers in accordance with this policy may be repacked and shipped in a wooden container if metal containers are not available.

5.11.7.3. Time-Change Components.

5.11.7.3.1. Normally, aircraft time-change components issued from programmed stocks will have maximum operating time remaining. However, components listed in paragraph *5.11.5.1.1* which are classified Condition Code B with less than maximum time may be issued. Issues in these instances will be restricted to CONUS excluding STRAC units.

5.11.7.3.2. DA Form 2410, Component Removal and Repair/Overhaul Record, will accompany aircraft time-change components and selected condition components from time of removal of these items from the aircraft until their installation in the same or another aircraft, until the end of component service life. This includes accompanying the component to and from maintenance, repair, and overhaul activities and contract facilities.

CHAPTER 5

STORAGE OF SPECIAL COMMODITIES

Section XII. MARINE ITEMS

	Paragraph	Page
Definitions	5.12.1.	512-1
Receipts	5.12.2.	512-1
Storage	5.12.3.	512-1
Related equipment and supplies	5.12.4.	512-2
Care and preservation	5.12.5.	512-2
Preparation for shipment	5.12.6.	512-3

5.12.1. Definitions

5.12.1.1. Army Marine Floating Equipment. Self-propelled and non-propelled boats, vessels, tugs, barges, floating cranes, and landing craft, together with the equipment installed thereon.

5.12.1.2. Basic Issue List Items (BILI) for Marine Equipment. Items or components (formerly known as on-board spares, initial spare parts support operating equipment and operating supplies), which comprise boat sets. Accessory and installed equipment is considered to be part of the vessel and, as such, will not be classed as BILI. A definitive list of BILI is included in the Repair Parts and Special Tool Sets appendixes published in the TM 55-series of technical manuals.

5.12.2. Receipts

The inventory control point will furnish storage installations advice of vessels scheduled for return to storage, concurrent with the forwarding of shipping instructions to the losing activity. Instructions will include type of storage to be given returned equipment.

5.12.3. Storage

5.12.3.1. General. Preparation of vessels for storage will be accomplished in accordance with the provisions of TB TC 9 and applicable military specifications or special instructions of the inventory control point. In all cases, vessels will be prepared in such a manner as to insure conformance to requirements of the Materiel Readiness Program.

5.12.3.2. Drydocking of Stored Vessels. Commanders of storing installations will maintain drydocking schedules to insure that requirements of the Materiel Readiness Program are met. Schedules will be submitted to the inventory control point for approval.

5.12.3.3. Drydocking Time Limits. Drydocking time limits will be established in accordance with TB TC 9.

5.12.3.4. Groups of wet-stored craft, painted with vinyl or conventional bottom paints, will be programmed for drydocking by storage managers of wet-storage activities in accordance with time limits established under paragraph 5.12.3.3. Dependent upon the condition of bottom paint, each drydocked craft will be repainted with vinyl or conventional bottom paint as outlined by TB TC 4.

5.12.3.5. Appropriate equipment log book records will be annotated to reflect type of bottom paint used when drydocked craft are painted and returned to wet storage.

5.12.3.6. A report of drydocking, painting, and condition of vessel bottoms will be submitted to the inventory control point upon completion of each drydocking and not later than 10 workdays following date vessels are refloated. One copy of completed report will be maintained in the vessel's maintenance file. Report format will be in accordance with instructions from the inventory control point.

5.12.3.7. When report is prepared on vessels having more than one propeller, reference will be made to a specific propeller, i.e., port, starboard, center.

5.12.4. Related Equipment and Supplies

5.12.4.1. Receiving documents covering repair parts, table of distribution allowance for operating equipment and supplies, and operating equipment for vessels will be processed as outlined in AR 725-50 and special instructions furnished by the inventory control point.

5.12.4.2. Equipment, such as antennas, switch boxes, and cable installations, will not be removed from deactivated vessels scheduled for long-term storage. This equipment will be processed and preserved in accordance with specifications and will be retained intact aboard the vessel.

5.12.4.3. Except as indicated above, electronic equipment and initial repair parts support items pertinent thereto will be removed from the vessel being deactivated. This equipment will be reported or disposed of in accordance with instructions from the inventory control point and AR 755-1.

5.12.5. Care and Preservation

5.12.5.1. Care and preservation of Army vessels will be accomplished in accordance with the provisions of TB TC 9; TB TC 4; chapter 3, sections VIII and XIV of this manual; applicable preservation and packaging specifications; and special instructions by the inventory control point. In all instances, care and preservation will be accomplished to insure the requirements of the Materiel Readiness Program are satisfied.

5.12.5.2. Initial preservation of vessels will be performed by the storage installation personnel, except in cases where this cannot be accomplished due to lack of facilities, or unless processing by contractual arrangement is more advantageous.

5.12.5.3. Care and preservation processing will be scheduled in accordance with priorities outlined in section VIII, chapter 3, of this manual. However, special consideration must be given to craft in wet-storage when scheduling preservation within priorities. Under these conditions, the following will apply:

5.12.5.3.1. Priority I. Depot maintenance authorized and performed.

5.12.5.3.1.1. Self-propelled vessels, floating repair shops, floating cranes, and refrigerated barges.

5.12.5.3.1.2. Liquid cargo barges and spud barges.

5.12.5.3.2. Priority II. Depot maintenance not authorized, but vessel authorized for retention.

5.12.5.3.2.1. Self-propelled vessels, floating repair shops, floating cranes, and refrigerated barges.

5.12.5.3.2.2. Liquid cargo barges and pontoons.

5.12.5.3.3. Priority III. Depot maintenance authorized and performed.

5.12.5.3.3.1. Nonpropelled vessels without engines, engine-driven pumps, or other precision machinery.

5.12.5.3.3.2. Sectionalized barges and pontoons.

5.12.5.3.4. Priority IV. Depot maintenance not authorized, but item authorized for stock under retention policy. All vessels not listed above.

5.12.5.4. Unless approved in advance by the inventory control point, funds will not be expended for preservation of vessels excessed under current policy, those not economically reparable, and those held pending decision as to retention or disposal. In all cases, such vessels will be of lower priority than those listed in paragraph 5.12.5.3. above.

5.12.5.5. Markings will be obliterated on equipment for which disposal has been authorized as outlined by TB TC 4.

5.12.5.6. Cyclical surveillance inspections will be performed, recorded, and reported, in accordance with instructions contained in chapter 3, section VIII, of this manual, except that—

5.12.5.6.1. Observation and recording of dehumidification machine hour meter readings, sensing element readings, and inspection of exterior sealing on vessels will be performed at 2-week intervals. Interval may be extended to once monthly for specific items or designs when records indicate that humidity readings of 40 percent relative humidity or less have been consistent.

5.12.5.6.2. Inspection of vessel interiors under dehumidification will conform to instructions contained in chapter 3, section VIII, of this manual. In no instance will the interval exceed 5 years for each vessel.

5.12.5.6.3. Special inspections may be performed if unusual circumstances indicate they are necessary.

5.12.5.6.4. Reapplication of preservatives to items under dehumidification will not be performed for protection during periods of high humidity unless so directed by the commander of the installation. Disassembly or operation of equipment will not be performed as routine aspects of inspection, except as warranted by special circumstances.

5.12.5.7. The need for minor repairs or adjustments found during cyclic, scheduled, or special surveillance inspections will be performed by the storing installation provided the estimated total costs are not in excess of the limiting dollar amount determined by applying the table shown in chapter 3, section VIII, of this manual.

5.12.6. Preparation for Shipment

5.12.6.1. Prior to return to user or storage, all craft under contract for repair will be subjected to all tests, trials, and adjustments which are contractor responsibility. To insure that the foregoing have been completed by the contractor, a certificate of completion will be obtained. Certification of completion will be signed by a person authorized to perform surveillance of the contract, and will officially indicate that all work has been completed to the satisfaction of the DoD inspector assigned to the craft.

5.12.6.2. Activation of Army vessels will be accomplished as directed by the ICP. Upon receipt of advice for activation of a vessel of a specific design or type, the storage location will select the hull number of that design or type for shipment. Shipment orders will reflect transportation dates established, to include activation leadtimes published in SB 55-30-6.

5.12.6.3. Vessels will be processed for shipment in accordance with the following instructions:

5.12.6.3.1. Boats will be outfitted with BILI. All applicable BILI will be furnished with the vessel unless exception is granted by the inventory control point. Automatic shipment of authorized shortages in BILI from the shipping depot will not be made.

5.12.6.3.2. The inventory control point will furnish the shipping activity with information relative to electronic equipment authorized for installation concurrent with vessel activation instructions.

5.12.6.4. Shipping activity will requisition signal and electronic equipment items required for on-vessel installation and electronic equipment and initial issue repair parts, as required, when such equipment is not prepositioned.

5.12.6.4.1. Requisitions for the foregoing equipment will include—

5.12.6.4.1.1. Basis of issue.

5.12.6.4.1.2. Type of vessel.

5.12.6.4.1.3. Design number.

5.12.6.4.1.4. Hull number.

5.12.6.4.1.5. Voltage of vessel.

5.12.6.4.1.6. Mark for (vessel hull number).

5.12.6.5. Depreservation instructions for preparation of vessels for shipment are located on vessels that are in long-term storage. These instructions will indicate items to be depreserved and reinstalled prior to use.

5.12.6.6. Marking and painting of vessels, when required, will be accomplished in accordance with TB TC 4.

5.12.6.7. All applicable technical publications and instructions will be included with the equipment at time of shipment.

5.12.6.8. Except as noted in paragraphs 5.12.6.9., 5.12.6.10., and 5.12.6.11., below, trial operation tests will be conducted on the following items prior to shipment:

5.12.6.8.1. Power units and associated equipment shipped as individual items (engines, engine generators, motor driven pumps, compressors, etc.), or shipped as installed components of end items such as vessels.

5.12.6.8.2. Accompanying electrical equipment such as controllers, switches, and switchboards, necessary to furnish power in the normal use of the power units.

5.12.6.8.3. At time of preparation of equipment for shipment, whether item is operationally tested or not, a check will be made to assure the availability of equipment manuals, wiring and piping diagrams, lubrication orders, and on board or initial issue repair parts or tools, as applicable to the items shipped.

5.12.6.9. Trial operation tests will not be required for items such as these enumerated above stored and shipped in method II packages or cocoons unless it is necessary, for other reasons, to remove packaging.

5.12.6.10. Normally, tests will not be performed on items having been in storage less than 1 year provided such items were in serviceable condition or were reconditioned before preservation for storage and are known to be preserved under current specifications.

5.12.6.11. Deprocessing of items for tests will be held to a minimum consistent with requirements to determine its capability to perform its function.

CHAPTER 5

STORAGE OF SPECIAL COMMODITIES

Section XIII. RAILWAY EQUIPMENT AND COMPONENTS

	Paragraph	Page
General	5.13.1.	513-1
Care in storage	5.13.2.	513-2
Inspections by the storage activity	5.13.3.	513-2
Painting	5.13.4.	513-2
Preservation of journals	5.13.5.	513-3
Treatment of cooling water in diesel engines	5.13.6.	513-3
Preshipment testing	5.13.7.	513-3
Shipment of rail equipment	5.13.8.	513-4

5.13.1. General

5.13.1.1. The inventory control point, or the appropriate command in oversea areas, will provide storage locations with storage requirements (class of storage) to be given specific items or types of rail equipment.

Unless otherwise specified, ambulance cars and kitchen cars will be maintained in indefinite storage as defined in AR 40-532.

5.13.1.2. Railway equipment will be processed and cocooned as directed by the inventory control point in accordance with the contents of TB TC 14. See Figure 1, showing diesel engines under dynamic controlled humidity environment.

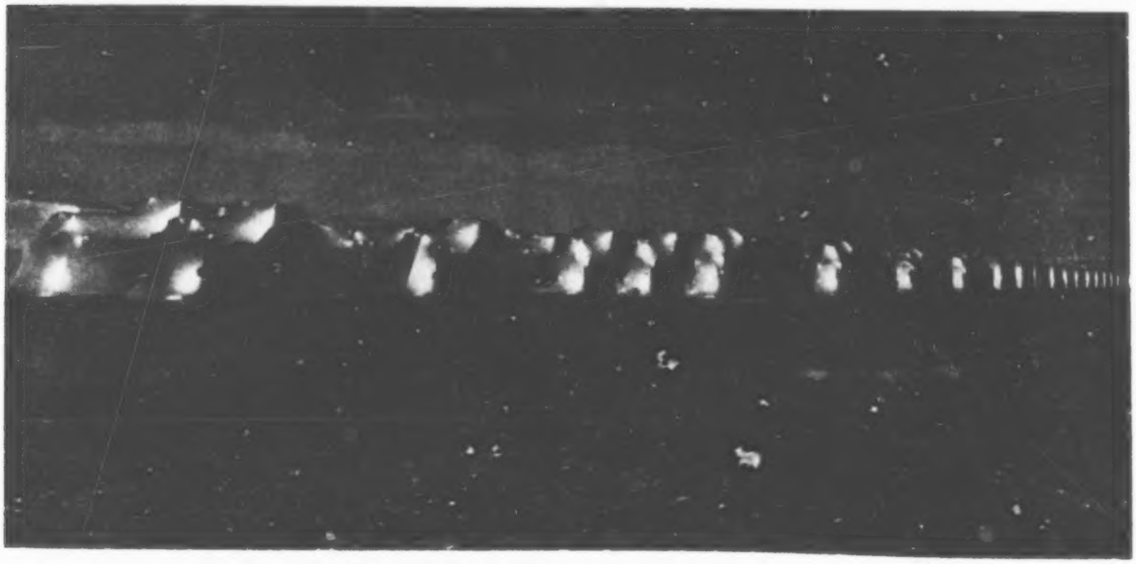


Figure 1. Diesel engines under dynamic controlled humidity environment.

5.13.1.3. Periodic inspections of rail equipment will be accomplished in accordance with chapter 3, section VIII, of this manual, and paragraphs 5.13.2. and 5.13.3. of this section.

5.13.1.4. Equipment records will be maintained in accordance with TM 38-750.

5.13.2. Care in Storage

5.13.2.1. Minor repairs or adjustments, e.g., replacement of broken windows, etc., detected as a result of normal surveillance inspections, will be accomplished by the storing installation without further approval action by higher authority, provided the estimated total costs are not in excess of the dollar amount determined by applying the criteria shown in chapter 3, section VIII, of this manual.

5.13.2.2. Items found to be in need of minor repair or adjustment will be reclassified to the appropriate condition code according to chapter 3, section VIII, of this manual.

5.13.3. Inspections by the Storage Activity

5.13.3.1. The frequency and conduct of inspections will be in accordance with directives shown in chapter 3, section VIII, and will include the following additional criteria or actions:

5.13.3.2. For dynamically or statically dehumidified equipment, unless prevailing conditions or specific instructions indicate otherwise, "safe" readings on sensing elements or other humidity indicators will be considered adequate inspection. Relative humidity reading of 40 percent or less will be considered safe.

5.13.3.3. Cocooned dynamically dehumidified equipment, i.e., cocooned equipment or packages in which the degree of humidity is controlled by mechanical means, will have the sensing and dehumidifier meter reading recorded daily during "drydown" period. After desired humidity level has been reached, recordings will be taken at periodic intervals of local determination, sufficient to assure the presence of consistent "safe" readings. In event of dehumidifier failure or humidity readings in excess of desired level, daily recordings will be taken until a satisfactory level is recorded on 3 successive workdays. Items or contents of a package will be inspected after any interruption of safe humidity readings.

5.13.3.3.1. Cocooned dynamically dehumidified equipment should not be stored in controlled humidity warehouses.

5.13.3.3.2. Cocooned statically dehumidified items should not be stored in controlled humidity warehouses.

5.13.3.4. Railway wheel and axle sets will be inspected in accordance with criteria established in chapter 3, section VIII, of this manual.

5.13.3.5. A representative locomotive or crane in cocooned storage will be physically inspected after each 360 days in storage. Installations will request a waiver from this requirement when local conditions indicate that less frequent inspections will suffice.

5.13.3.6. Physical inspection of cocooned locomotives and locomotive cranes will consist of tests and visual examination for evidence of corrosion, condensation, defective painted or preserved surfaces, adequacy of vinyl film, and dehumidification system or other indications of deterioration.

5.13.3.7. Evidence of breakdown of preservatives or signs of deterioration will require that equipment be disassembled, as necessary, and reprocessed. When defects are found, other like units in other locomotives and locomotive cranes will be inspected and, if necessary, similarly treated.

5.13.3.8. At time rail items are removed from cocooned storage, megohm-meter insulation tests of traction motors and generators will be performed.

5.13.4. Painting

5.13.4.1. Spot painting of rail equipment will be employed to allay deterioration in lieu of a complete paint job by using paint identical to that on surrounding area. When full paint job are required, MIL-P-3321 for locomotives and MIL-P-3320 for 40-ton knocked down rail fleet will apply.

5.13.4.2. Where metal surfaces or railway equipment in storage can be easily cleaned to bare metal, *two* coats of *red primer* conforming to TT-P-664 will be applied to those surfaces requiring paint.

5.13.4.3. In cases where it is difficult to clean bare metal, *two* coats of paint conforming to MIL-P-13596 will be applied after the removal of as much rust as possible from the surface. This paint is formulated to be effective on lightly rusted surfaces and should be brushed. This paint should also be rubbed into wire screening by means of a wiping cloth.

5.13.5. Preservation of Journals

5.13.5.1. Journals on track-stored equipment, not under cocoon, and truck assemblies otherwise stored will be preserved and rolling stock exercised periodically, as prescribed in TB TC 14.

5.13.5.2. Journals of wheel and axle assemblies in storage will be properly cleaned and polished with crocus cloth. Preservative selected according to TB TC 14 and conforming to MIL-P-116 will be applied. The same method will be used when touchup of journals is required.

5.13.6. Treatment of Cooling Water in Diesel Engines

Procedures for prevention of corrosion and scale formation to diesel engines through chemical treatment of cooling water systems are contained in TB TC 15-10.

5.13.7. Preshipment Testing

5.13.7.1. Tests will not be required on items in storage less than 1 year, provided such items were in serviceable condition or were reconditioned before preservation, and are known to be preserved under current approved specifications.

5.13.7.2. Trial operation tests will be conducted on the following items prior to shipment, unless otherwise directed by the inventory control point.

5.13.7.2.1. Power units and associated equipment shipped as individual items (engines, engine-generators, compressors, etc.), or shipped as installed components of end items such as cranes and locomotives and kitchen, hospital, or maintenance cars.

5.13.7.2.2. Accompanying electrical equipment such as controllers, switches, and switchboards necessary to furnish power in the normal use of the power units.

5.13.7.2.3. Wet-charged batteries will be maintained and installed in the locomotive for test purposes.

5.13.7.2.4. For drive-away or CONUS shipments only, dry-charged batteries which were activated and installed for test purposes will be shipped with the locomotive. Batteries will be fully charged and contain the proper amount of electrolyte at time of shipment. For oversea shipment, only dry-charged batteries, with electrolyte secured separately, will be shipped.

5.13.7.3. A simultaneous check will be made to assure the availability of equipment manuals, wiring and piping diagrams, lubrication orders, and basic issue list items, as applicable to item shipped. The check to assure that applicable BILI are included in shipment will be made even though operational tests may not be required.

5.13.7.4. Trial operational tests will not be required for items stored and shipped in method II packs.

5.13.7.5. Deprocessing of items for tests will be held to a minimum consistent with that required to permit operation of the item to determine its capability to perform its function.

5.13.7.6. Preservation and packaging specifications as shown below will be used for guidance in the preservation and packaging of rail items for oversea shipment.

5.13.7.6.1. MIL-P-12084, Crane, Locomotive.

5.13.7.6.2. MIL-P-3259A, Diesel (Electric), Locomotive.

5.13.7.6.3. MIL-P-3188, Cars, Railway.

5.13.7.6.4. MIL-P-11929, Cars, Railway, Knocked Down.

5.13.7.6.5. Packaging and packing of repair parts and accessories will be in accordance with appropriate item specification.

5.13.8. Shipment of Rail Equipment

5.13.8.1. Shipment of principal items of railway equipment will be accomplished as directed by the inventory control point. Shipment orders will reflect movement dates established to include necessary activation leadtimes as published in SB 55-30-6.

5.13.8.2. Depreservation, servicing, testing, and preparation of diesel electric locomotives for shipment will be accomplished in accordance with TB TC 15-14.

5.13.8.3. While in transit on their own wheels, cranes (railway, locomotive) with boom detached, will have rotating portion of cranes anchored in accordance with TB TC 15-13.

5.13.8.4. To permit utilization of rail equipment in the designated oversea areas, couplers on rail equipment destined for overseas will be changed prior to shipment from the shipping installations. Coupling equipment peculiar to shipment destination area will be installed, except when required couplers are not compatible with movement of equipment over CONUS commercial rails, changes in couplers will be made at the point directed by the inventory control point. The provisions of TB 55-1273-1 will apply for coupling changes to diesel electric locomotives, 45-ton. For other rail items, the applicable equipment TM will apply.

5.13.8.5. The methods for movement of locomotives in tow over commercial railroads and assistance to be rendered by mobile rail shops to place equipment in service at the using activity are defined in AR 55-254.

5.13.8.6. Ends and sides of cars comprising a 40-ton knocked down rail fleet may not, in all instances, be marked with registration number at time of delivery from contractor. In order to facilitate shipment of these cars, either numbered or unnumbered ends and sides may be selected at random for shipment. The numbered components may or may not conform to the underframe name plate data. The car data, as included on the *underframe* name plate, will determine the registration of the car. Registration numbers reflected on sides and ends of cars will be obliterated and numbers conforming to the underframe name plate will be applied. Sides and ends containing no numbers will be marked with applicable underframe name plate data. The foregoing will be applicable only at time of shipment.

CHAPTER 5
STORAGE OF SPECIAL COMMODITIES

Section XIV. DEPOT STORAGE OF ARMY AIR DELIVERY EQUIPMENT

	Paragraph	Page
General	5.14.1.	514-1
Definitions	5.14.2.	514-1
New procurement receipts	5.14.3.	514-2
Receipts from other installations	5.14.4.	514-3
In-storage inspection	5.14.5.	514-3
Shipment	5.14.6.	514-3
General inspection criteria	5.14.7.	514-3
Report of inspection	5.14.8.	514-4
Historical records	5.14.9.	514-4
Army parachute log record (DA Form 3912)	5.14.10.	514-4
Storage methods	5.14.11.	514-4
Preservation and packing	5.14.12.	514-5
Housekeeping	5.14.13.	514-5
Inspection and test criteria	5.14.14.	514-5

5-14.1. General

The instructions contained herein, together with TM 10-1670-201-23, SB 740-99-13 and SB 740-99-1, applicable specifications, and technical instructions and directives from the inventory control point, will be adhered to by CONUS and oversea installations in the receipt, inspection, storage, and issue of Army air delivery equipment.

5.14.2. Definitions

5.14.2.1. Parachute Rigger. Federal Aviation Agency (FAA) qualified civilian personnel or military personnel who are qualified parachutists currently on jump status, and who have been awarded the parachute rigger MOS (Military Occupational Specialty) in accordance with AR 611-201.

5.14.2.2. New Procurement and/or Newly Procured. Items of air delivery equipment received from a manufacturer as a result of procurement action. This also includes items which have been returned to the vendor on which contractor has corrected defects and shipped to the Government a second time.

5.14.2.3. Air Delivery Equipment. Special items of equipment, such as parachutes, equipment containers, platforms, tiedown devices, and other related items which are used in the air delivery of personnel, supplies, and equipment.

5.14.2.4. Accepted/Rejected. Equipment found, respectively, to be acceptable or unacceptable for use in accordance with the inspection criteria prescribed in applicable drawings and specifications.

5.14.2.5. Inbound Inspection Lot. A total quantity of like items received at one time as a single complete shipment, or partial shipment, from a given contractor on a single contract.

5.14.2.6. In-Storage Inspection Lot. The total quantity of an air delivery type item which is in storage under one NSN (National Stock Number) item identification, condition code, type of pack, date of pack, storage location, and, if applicable, date of manufacture.

5.14.2.7. Technical Inspection. An inspection performed on air delivery equipment to verify serviceability and/or conformance with specifications or other special criteria.

5.14.2.8. Functional Inspection. An inspection or test performed to determine the functional capability of an item.

NOTE

Technical and functional inspections are intended to be performed one time only. However, these inspections must be accomplished whenever there is reason to suspect that a deficiency exists which may warrant an inspection.

5.14.2.9. Cyclic Inspection. A periodic systematic examination of stored material to determine serviceability, to detect deterioration while in storage, and to furnish data for any necessary condition reclassification actions.

5.14.2.10. Incoming Inspection. Inspection performed on materiel received at the depot to determine and record its actual condition identification prior to placing it in storage.

5.14.2.11. Technical/Rigger-Type Inspection. A complete technical inspection of an item of air delivery equipment performed by a qualified parachute rigger.

5.14.2.12. Age Life. The maximum period of time during which an item is serviceable for its intended use. Age life begins at the date of manufacture and extends over a specified number of years. (Shelf life is a specified period of time an item may remain in storage before issue, whereas service life is a specified period of time which begins at the time an item is originally placed in use.) The term "age life" encompasses both shelf life and service life.

5.14.2.13. Troop-Type Personnel Parachute. A parachute designed and intended for use by parachutist personnel when performing premeditated parachute jumps. Included in this category are static line-deployed back parachutes, free-fall back parachutes with automatic opening devices, and chest reserve parachutes which are manually deployed assemblies worn in conjunction with a back troop-type personnel parachute.

5.14.2.14. Emergency-Type Personnel Parachute. A parachute which is used by personnel participating in aerial flight in the event of an in-flight crisis that might require emergency bail-out. Emergency-type parachutes are designed in back, seat, and chest styles which are actuated manually.

5.14.3. New Procurement Receipts

(For CONUS—See DARCOM Regulation 702-7)

5.14.3.1. Air delivery equipment received at a storage installation as new procurement to be inspected and accepted at destination will be subjected to technical and functional inspections to verify compliance with criteria of the applicable drawings, specifications, and technical data of contract, and to insure that the equipment is functionally serviceable.

5.14.3.2. Defects will be classified critical, major, or minor in accordance with the criteria of applicable specifications. When the specification does not contain such classification criteria, the general defects classification of MIL-STD-105 will apply. Sampling plan, sample size, and acceptance/rejection criteria will be obtained from MIL-STD-105, using the Acceptable Quality Level (AQL) specified in contractual documents and initially selecting a sample quantity conforming to Level I, table II-A of the MIL-STD-105A. Upon completion of inspection of the initial sampling quantity, the shipment may be accepted if results are within the AQL specified. However, if the inspection results justify rejection of the shipment, an additional sample quantity will be inspected to increase the quantity inspected to the inspection levels prescribed in contractual documents (use Level II for parachutes and associated components, and when a level is not specified). The total sample size will be applied to the specified AQL's and inspection results and the shipment will be either accepted or rejected accordingly. When AQL's are not specified in contractual documents, the following will apply:

5.14.3.2.1. Critical — .065% defective. (No critical or major defects are acceptable on parachutes or components.)

5.14.3.2.2. Major — 1.0% defective. (No critical or major defects are acceptable on parachutes or components.)

5.14.3.2.3. Minor — 4.0% defective.

5.14.3.3. Results of inspection of all incoming shipments of air delivery equipment received from contractors as new procurement will be recorded and processed as required by this manual and other pertinent publications.

5.14.3.4. Government owned materiel will be processed to the accountable records in accordance with AR 725-50. Discrepancies will be processed in accordance with chapter 3, section V, of this manual.

5.14.3.5. Materiel received for acceptance at destination will be processed in accordance with AR 725-50. Rejected material in this category will be reported to the Accountable Supply Distribution Activity (ASDA) by letter to provide notice or rejection and the fact that the material is being held pending receipt of disposition instructions. Rejected material being held will be placarded SUSPENDED and the remarks section of the placard will be annotated CONTRACTOR OWNED REJECTED MATERIAL.

5.14.3.6. When disposition instructions are received to return rejected material to the contractor, shipping documents will be prepared to show that the material is being returned to the manufacturer for inspection and correction of deficiencies.

5.14.3.7. When material received is acceptable (within the specified AQL) with defects noted, regardless of the point of acceptance, a report will be submitted to the quality assurance element of the ASDA citing the defects noted during inspection so that action may be initiated to preclude recurrence of similar deficiencies of future production by the manufacturer involved.

5.14.4. Receipts from Other Installations

5.14.4.1. Air delivery type items received from a maintenance activity identified as serviceable, normally will be given only a visual inspection of shipping containers to assure that pilferage or tampering has not occurred, material was not damaged by handling, insects, rodents, or other elements, and that the container is properly packed, marked, and strapped.

5.14.4.2. Air delivery items received as an inter-depot stock transfer will be subjected to a technical inspection. Sample quantity selected will conform to Level I, table II of MIL-STD-105, using the AQL specified in paragraphs 5.14.3.2.1, 5.14.3.2.2 and 5.14.3.2.3.

5.14.4.3. DD Form 1225, Storage Quality Control Report, will be prepared to report all classification actions when material received from other installations is classified to a condition other than serviceable (Condition Code A). Reports will indicate the nature of deficiencies noted. CONUS depots will forward one information copy to Commander, US Army Troop Support and Aviation Materiel Readiness Command (TSARCOM), ATTN: DRSTS-SAIA, DRSTS-QVP, 4300 Goodfellow Boulevard, St. Louis, MO 63120. Oversea activities will comply with the reporting procedures of the applicable theater.

5.14.4.4. Returns from posts, camps, and stations using units will be given a 100% visual, technical, and functional inspection unless otherwise specified by the ASDA.

5.14.4.5. A DD Form 1486, DOD Material Receipt Document, or DD Form 1487, DOD Materiel Adjustment Document, will be prepared and processed to record or change the condition of material on the ASDA accountable records. Other prescribed forms will be processed to report the receipt or change to the appropriate depot elements.

5.14.5. In-Storage Inspection

5.14.5.1. All air delivery equipment in storage will be inspected in accordance with SB 740-99-1.

5.14.6. Shipment

5.14.6.1. Air delivery equipment being shipped to either oversea or domestic destinations that is not within one month of requiring a cyclic inspection will require a visual inspection only.

5.14.6.2. Air delivery equipment being shipped to either oversea or domestic destinations that requires a cyclic inspection within a one month period from date of shipment will be given an inspection to assure serviceability.

5.14.6.3. Personnel parachutes, canopies, harnesses, pilot chutes, and risers will not be issued unless they meet the requirements of TB 43-0002-4.

5.14.7. General Inspection Criteria

5.14.7.1. Technical inspection of parachutes will be performed in accordance with SB 740-99-13.

5.14.7.2. Inspection of air delivery equipment other than parachutes and components thereof may be performed by competent personnel at the discretion of the installation commander.

5.14.7.3. Installation activities performing either inspection or packing of personnel parachutes will function under the supervision of a military parachute rigger, currently on jump status, possessing MOS 74820, 461A, 43E5P, or 43E4P.

5.14.7.4. On January 1 of each year, age life parachutes and components will have one year added to their age. For example, an item manufactured in December 1975 will become one year old on 1 January 1976. In order to preclude issue of items with less than one year of age life remaining, parachutes and components in depot stock will be classified uneconomically reparable (Condition Code H) on January 1 of the year immediately preceding the year of actual age life expiration.

5.14.7.4.1. During classification inspection of personnel parachutes and canopies, the Army Parachute Log Record DA Form 3912, will be inspected and compared to the dates of manufacture of components to ascertain the age. TB 43-0002-4 specifies the age life criteria.

However, the date of manufacture of the oldest age life component will be assigned as the date of manufacture of the end item parachute assembly. Personnel parachutes or canopies including troop type which at time of classification are within two years of expiration of the specified age life will be classified uneconomically reparable (Condition Code H), except those containing components which are not within two years of expiration of their respective specified age life will be disassembled and such components classified as Condition Code A. When, at time of classification, parachutes or components are within three years of age life expiration and require repair or modification, they will be classified as uneconomically reparable (Condition Code H). The foregoing criteria together with repair limitation tables of TB 43-0002-4 will be applied during classification inspection of parachutes and components returned to depots from posts, camps, and stations. A DD Form 1225 will be prepared to record and report such classification actions and one information copy will be forwarded to each of the applicable addresses indicated in paragraph 5.14.4.3. above. DD Forms 1486 or 1487, as applicable, will be processed to reflect the new condition code and identification for the items involved.

5.14.8. Report of Inspection

5.14.8.1. The results of all inspections performed will be reported in accordance with chapter 3, section VIII, of this manual and other applicable directives. Inspections which disclose deficiencies require submission of other reports as prescribed for specific categories of material elsewhere in this section.

5.14.8.2. Reports of rejections or deficiencies on new procurement will be distributed as requested by the DARCOM or the appropriate oversea commander. A copy of all reports will be furnished to Commanding General, TSARCOM, ATTN: DRSTS-QVP.

5.14.9. Historical Records

5.14.9.1. A record of all inspections will be maintained as required by DARCOM or appropriate overseas commander.

5.14.10. Army Parachute Log Record

This record will be maintained in accordance with instructions contained in TM 10-1670-201-23.

5.14.11. Storage Methods

5.14.11.1. The maximum number of years of age life (combined storage and service life from date of manufacture) for personnel parachutes and components in depot stocks will not exceed that outlined in TB 43-0002-4. That criteria may be modified by the ASDA as indicated in this manual or by separate instructions to assure that items will have adequate age life remaining at time of issue.

5.14.11.2. Storage installations must accomplish proper rotation of all air delivery equipment, by use of first-in, first-out (FIFO) principles of issue.

5.14.11.3. Containers of personnel parachutes and components are required to reflect the month and year of manufacture. Other air delivery type items, which are still in the manufacturer's pack can be controlled by the date of pack to assure the FIFO issue methods are followed. During depot repackaging and packing of air delivery equipment, the month and year of manufacture will be applied to the container exterior.

5.14.11.4. When storing, shipping, and/or receiving a complete assembled troop-type personnel parachute, the date of manufacture of the oldest component will be assigned as the date of manufacture of the end item (parachute). For example: A troop-type personnel parachute (MC1-1B) consists of a harness, canopy, two risers, pack and deployment bag. The harness, canopy and risers are age life items. These components are sometimes procured and issued separately. When the components are later assembled into an end item, it is quite possible that each will have a different year of manufacture. This is also possible for all other complete personnel parachutes. Further, when an age life component becomes unserviceable and is replaced, the new component will in all probability have a different year of manufacture than the original item. Therefore, the date of manufacture of the oldest age life component will be applied to the end item. When the oldest component reaches the expiration of age life, and other components have remaining age life, the parachute will either be disassembled and stocked as components or the overaged components replaced, as applicable, in accordance with the repair limitations outlined in TM 10-1670-201-23 as modified in this manual. In any event such conditions will be reported to the ASDA for disposition instructions.

5.14.12. Preservation and Packing

5.14.12.1. Preservation and packing of all types of parachutes and canopies for oversea destinations will be in accordance with applicable packaging data requirements. However, contractual requirements will apply when inspecting new procurement receipts.

5.14.12.2. When packing for storage or CONUS destinations, the interior containers and barriers may be taped, using a single strip of tape for closure to permit opening for cyclic inspections and application of MWO (Modification Work Order) without damage to the container and barrier. Taping of all seams and joints will be accomplished prior to oversea shipment.

5.14.12.3. Compatible year of manufacture of age life parachutes and components within a container in storage is desirable. Should it become necessary to mix years of manufacture within a container, a year of manufacture by quantity will be indicated on the container exterior.

5.14.12.4. Additional technical data and guidance relative to preservation, packing, marking, and care, will be furnished by the storage organization technical staff.

5.14.13. Housekeeping

5.14.13.1. The storage and inspection of air delivery equipment requires particular attention to housekeeping practices in general, with special emphasis on the following:

5.14.13.1.1. Inspection tables will be covered with cloth at the close of business each day and will be maintained free of splinters and other protrusions in order to prevent snagging of parachutes.

5.14.13.1.2. Floors will be kept free of dirt, grease, oil, and debris in order to prevent soiling of parachutes.

5.14.13.1.3. Overhead and inspection table lights will be kept clean. Weak light bulbs will be replaced in order to maintain the candlepower necessary to assure good inspection results.

5.14.13.1.4. When handling parachutes, employees will remove all jewelry such as rings, watches, bracelets, which contain sharp edges or protrusions which might cause snagging of canopy material.

5.14.14. Inspection and Test Criteria

5.14.14.1. Inspection and test criteria outlined in applicable specifications, drawings, procurement documents, and special instructions from the inventory control point will be used by storage installations to perform inspections of air delivery equipment. Criteria of TM's, and MWO's will be used only for verification inspection of the quality of maintenance and modifications performed, and will not be used for inspection of newly procured items unless the publication is listed in the applicable procurement document.

5.14.14.2. Applicable supply manuals will be used as the source of NSN data to assure that stocks are properly identified and recorded.

5.14.14.3. Testing procedures will be in accordance with section IV, TM 10-1670-201-23.

CHAPTER 5

STORAGE OF SPECIAL COMMODITIES

Section XV. HANDLING LONG, NARROW ITEMS

	Paragraph	Page
Introduction	5.15.1.	515-1
Definition	5.15.2.	515-1
Representative items	5.15.3.	515-1
Problems in storage	5.15.4.	515-1
Evaluation of specialized equipment	5.15.5.	515-2
Present depot methods	5.15.6.	515-5

5.15.1. Introduction

5.15.1.1. Handling and storage of long, narrow items are costly in manpower and space, principally because of the excessive maneuvering space required for equipment used and the degree of improvisation required in its handling. For many long, narrow items, no simple or easy method has been developed and no standard items of equipment are available that satisfactorily facilitate the handling process.

5.15.1.2. Certain commercially available and proposed equipment items possess characteristics that adapt them to handling of a limited number of long, narrow items. Depots have developed local method and handling devices that, in the absence of any formally standard or adopted methods or equipment, have proved satisfactory in handling many types of items of this category. It is the purpose of this section to consolidate and present the most beneficial of these methods and handling devices.

5.15.2. Definition

For the purpose of these instructions, long, narrow items are defined as items that, based on weight, would normally be handled by forklift truck but are too long to be transported along usual travel aisles and placed into storage (or selected) adjacent to aisles by 90° turn of lift truck.

5.15.3. Representative Items

Items that fit the category of long, narrow items as defined above are—

5.15.3.1. Aircraft and helicopter wing sections, rotor blades, stabilizers, shafts, frames, cones, flaps, tanks, and other aircraft components.

5.15.3.2. Prefabricated building components, boxed and bundled.

5.15.3.3. Rocket motors, lines, tubes, racks, antennas, masts, channels, generators, engines, struts, booms, and other miscellaneous items of related nature.

5.15.3.4. Items such as gun tubes, steel rods, exhaust and tail pipes and assemblies, fuel lines, and tubing.

5.15.4. Problems in Storage

5.15.4.1. Item Flexing. Many items, as normally packaged, are so long and nonrigid that pick-up by a single lift truck results in damage to the items because of flexing of the item (package) at either side of the forks. In addition, the center of balance is difficult to determine unless identified on item or package.

5.15.4.2. Aisle Requirements. A common method for handling many large items (including long, narrow items) is to pick up the item on lift truck forks, proceed forward along the storage aisle, and effect a 90° turn at the point of stowage, elevate the load as required, then deposit the item, and back away. The length of many of these items is so great that this method requires employment of excessively wide aisles. When materiel or packaging is too long for within-warehouse transport or too long to be carried cross-wise on lift truck forks and must be borne on trailer(s) or dollies, it presents a problem in maneuvering around corners. Difficulty is encountered in passing from one aisle into an intersecting aisle, from warehouse onto dock, or from dock into warehouse. To relieve this condition, it may be necessary to store the item(s) in areas immediately in line with cargo doors.

5.15.4.3. Space Consumption. Aside from the materiel movement conditions noted above, which can result in wider than usual aisles, long, narrow items generally are not compatible for storage in depth and often, not even for tiering. These items must be stored singly, resulting in additional space consumption through poor utilization of vertical space.

5.15.5. Evaluation of Specialized Equipment

Three commercially available materials handling vehicles are particularly adaptable to handling of long, narrow items, although their application is not unlimited. They are described below.

5.15.5.1. Truck, Lift, Self-Side Loading, Electric, 4000-pound Capacity. It has application in handling many long, narrow items. This truck has laterally extending forks recessed within the truck outline, and has a carrying platform on which to transport cargo. It can operate in 6-foot aisles provided that access aisle is at least 12 feet wide. See figure 1. The overall length is 148 inches. This vehicle cannot penetrate rows of columns where items are stored in block stack fashion. It can, therefore, only operate where items are stored in single-column depth and immediately adjacent to stacking aisle.

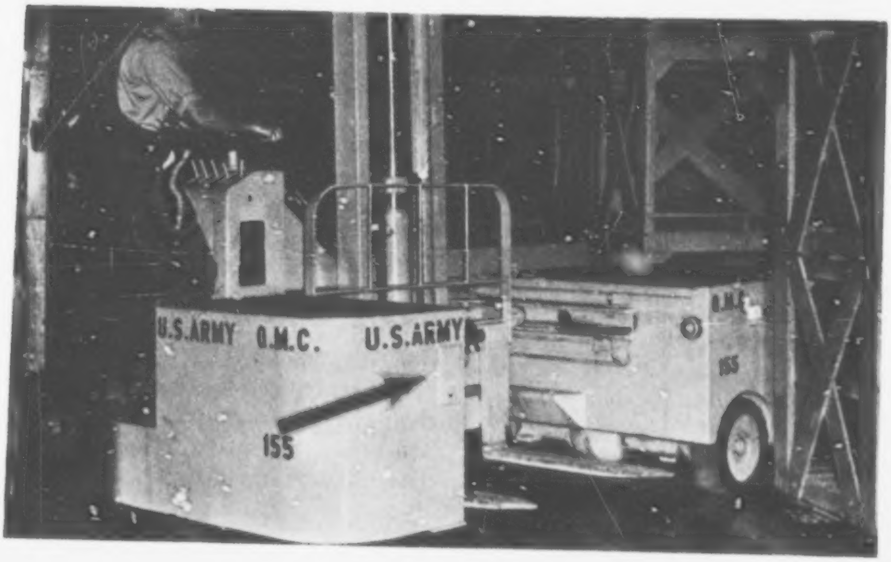


Figure 1. Self side loading truck turning from 12' aisle into 6' aisle.

5.15.5.2. Four-Directional (4-D) Tiering Truck. This item (fig. 2) (not standardized for military procurement) is equivalent to standard reaching and tiering trucks, except that it is designed to provide for traveling "sideways" as well as forward or rearward. Its description, and illustration, below, explain its application in the handling of long, narrow items. The 4-D truck is capable of traveling along an 8-foot aisle and turning 90° to select or deposit a load. It can handle a long load of up to 4000 pounds. In selection of a long load, it can travel forward along the aisle to the point of stowage, make the 90° turn and retrieve its load, retract and lower the carriage, and travel sideways out of the stacking aisle and into the traveling aisle. Procedure for storing is the opposite to that described for selection. The 4-D truck is also capable of storing in depth, which provides an advantage over the self-side-loading truck described above.

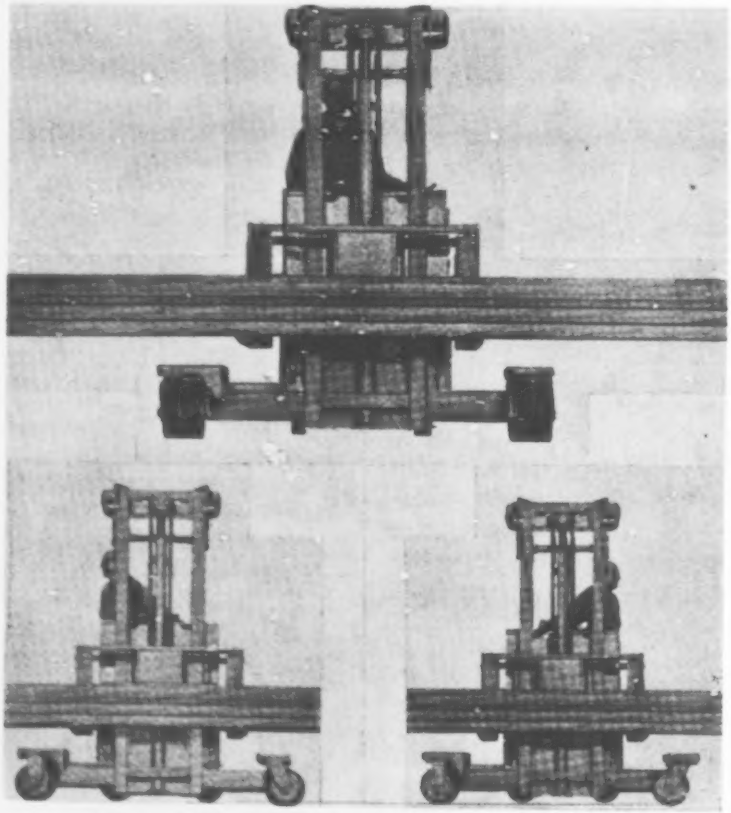


Figure 2. Four-Directional lifting and tiering truck.

5.15.5.3. Low Profile Mobile Crane. This item can be purchased in a variety of designs and capacities starting at 2,000-pounds. They are available with either gasoline engine or electric motor for travel. The boom will extend, retract, and rotate. Hydraulic control fixtures are kept to a minimum and are convenient to the operator. One type of this equipment being utilized in handling long, narrow items is depicted in figures 3 and 4. Standard warehouse cranes, as depicted in TM 743-200, chapter 4, though of greater capacity than normally required for the majority of long, narrow items, are also adaptable in some cases.

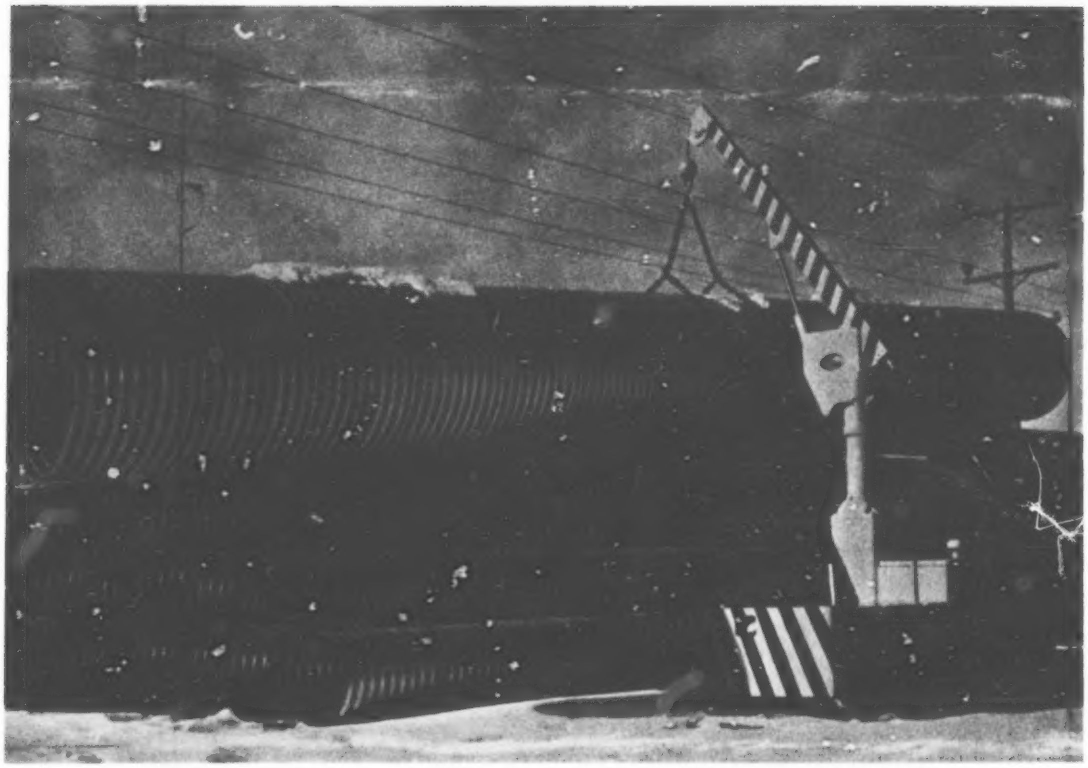


Figure 3. Low profile crane stacking materiel and using double sling arrangement to preserve center of balance and reduce stress at a small area.

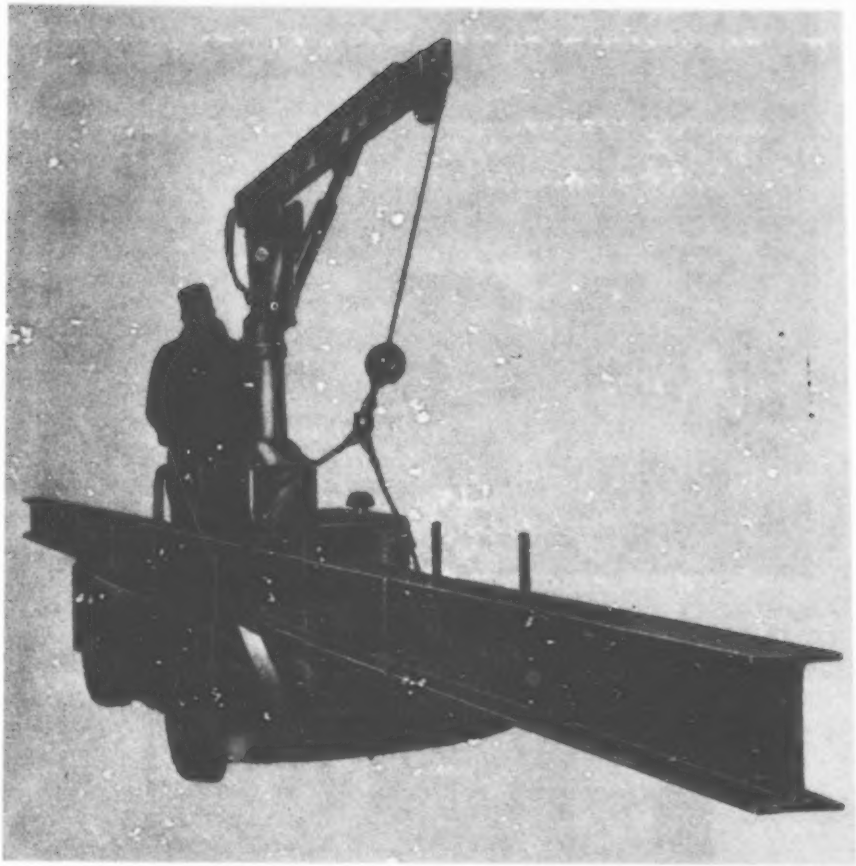


Figure 4. Low profile crane transporting long, narrow item on load bed.

5.15.6. Present Depot Methods

Depots whose missions include storage and issue of items of these characteristics have developed methods and devices that facilitate handling of long, narrow items. They have proved satisfactory, to a reasonable degree, and are worthy of adoption until new and more applicable equipment is developed or available.

5.15.6.1. Use of trailers and dollies.

5.15.6.1.1. Low profile warehouse trailers are applicable to movement of most low, narrow items. These trailers may be tractor drawn or moved manually. Less turning space is required if manually propelled. When carried on a trailer within a trailer train, it is preferable to have the entire weight of the long, narrow item borne on a single trailer. This can be done by placing dunnage or a type of fifth wheel beneath the carried item. By placing one dunnage member near the center of balance, the item can be manually tilted and pivoted on the one member (fig. 5).

5.15.6.1.2. Use of dollies, manually propelled, provides the greatest maneuverabilty and, for excessively long items, may be the sole means of transport into and out of warehouses or storing areas within warehouses (fig. 6).

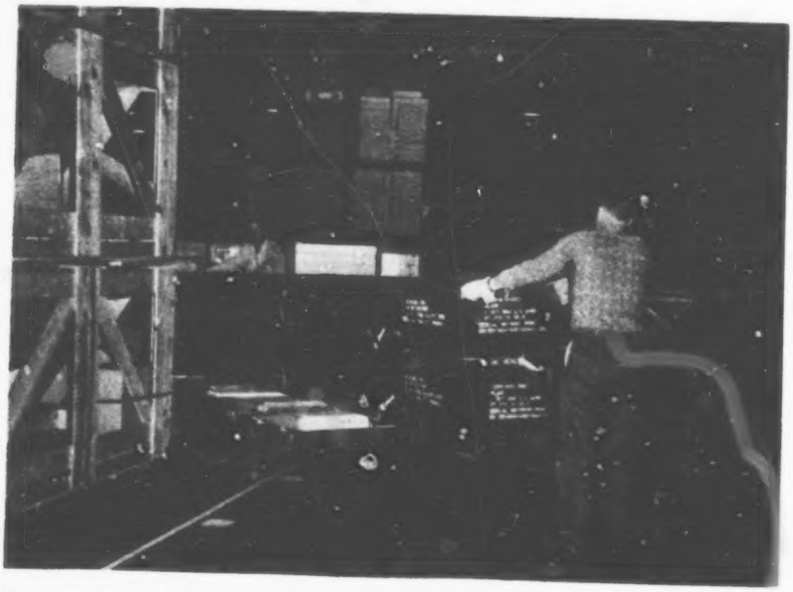


Figure 5. Use of warehouse trailer for warehouse transport of long, narrow items.

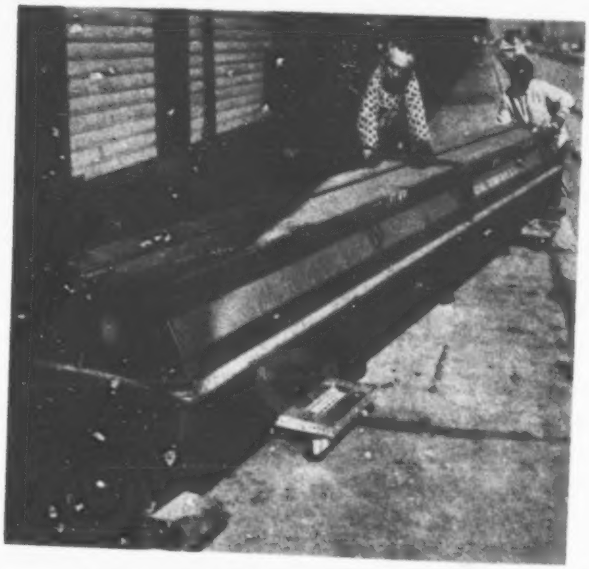


Figure 6. Moving long item by use of dollies.

5.15.6.2. Use of Forklift Trucks.

5.15.6.2.1. For handling large and heavy long items, two forklift trucks can be used, one at each end, facing each other, to transport an item, one vehicle traveling in reverse, one forward. See figure 7. Little maneuverability is possible. Entry and exit are most easily accomplished in connection with ground level warehouses. Only limited movement by this method can be accomplished from elevated docks into warehouses, or vice versa. For most efficient handling by this method, stowage should be adjacent to aisles that are in line with cargo doors, since capability of maneuvering around corners is very limited.

5.15.6.2.2. When long loads are brought alongside the area of stowage, one or two forklift trucks, positioned perpendicularly to the storage aisles, are used to place the load after removal of the transporting trailer or dollies. See figure 8.

5.15.6.3. Skidding. In some instances, particularly when items or containers are skid-mounted, they may be transported along warehouse docks or aisles by skidding on the floor. A forklift truck may be used to lift one end and push the item, guiding it simultaneously. This is the least desirable method of materials movement of these defined herein.

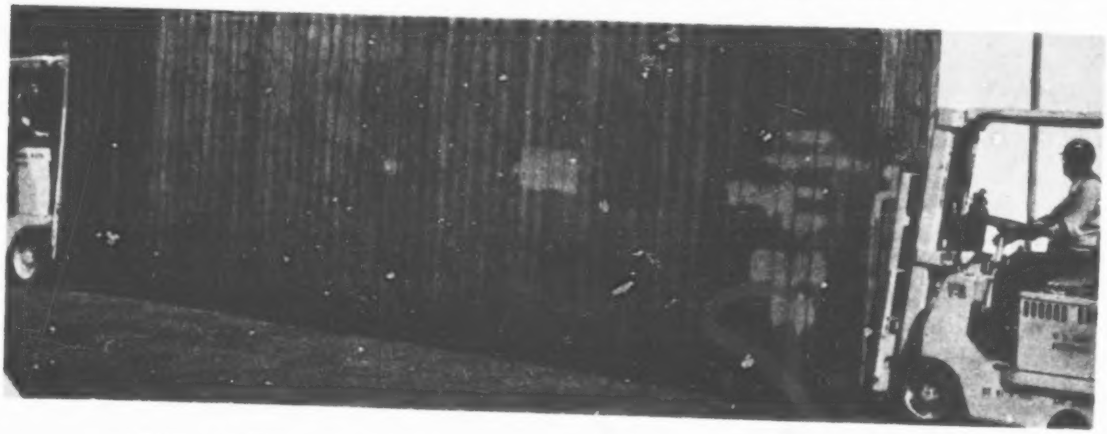


Figure 7. Using two forklift trucks for horizontal movement of an elongated item (aircraft wing assembly) to area of storage within the warehouse.

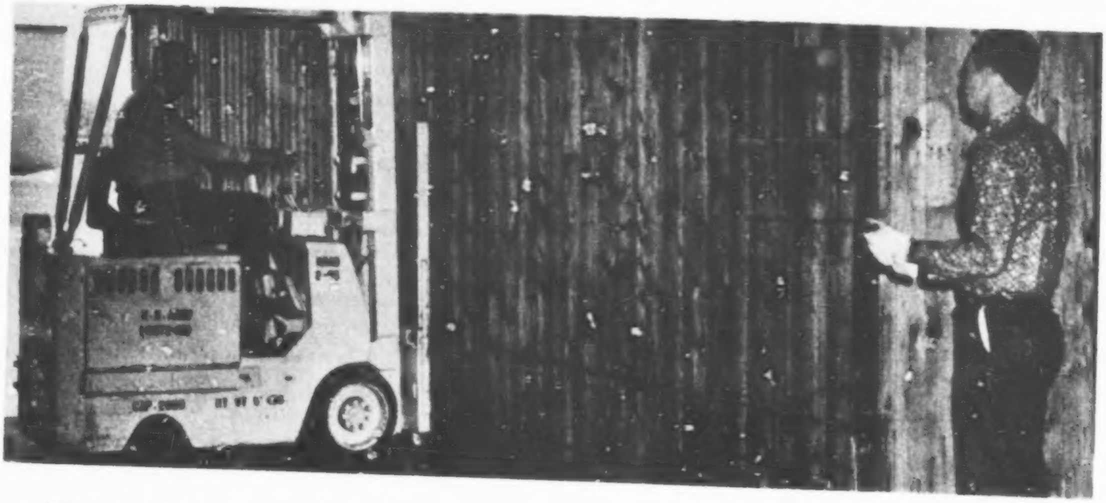


Figure 8. Using a single forklift truck to deposit elongated item following the step shown in figure 7.

5.15.6.4. Handling Devices. Devices have been developed that provide limited facility for handling certain long, narrow items. Two such devices are illustrated. When such devices change the load center of the forklift truck, a new capacity for the forklift will be computed and applied accordingly.

5.15.6.4.1. A pivoting carrying platform for attachment to lift truck forks (fig. 9) can be used to advantage in handling long loads of limited weight. Because of the extended lateral position of a load so carried, load capacity of this device will never exceed 1,000 pounds.

5.15.6.4.2. Another device is a longitudinally extending boom carried on the forks of a lift truck (fig. 10). This system provides maneuverability since the carried item can be guided around corners by manual swinging of the item at the point of suspension. Extent of application of this device is limited to the weight that can be safely carried by the lift truck. The new capacity of the forklift truck will not be exceeded.

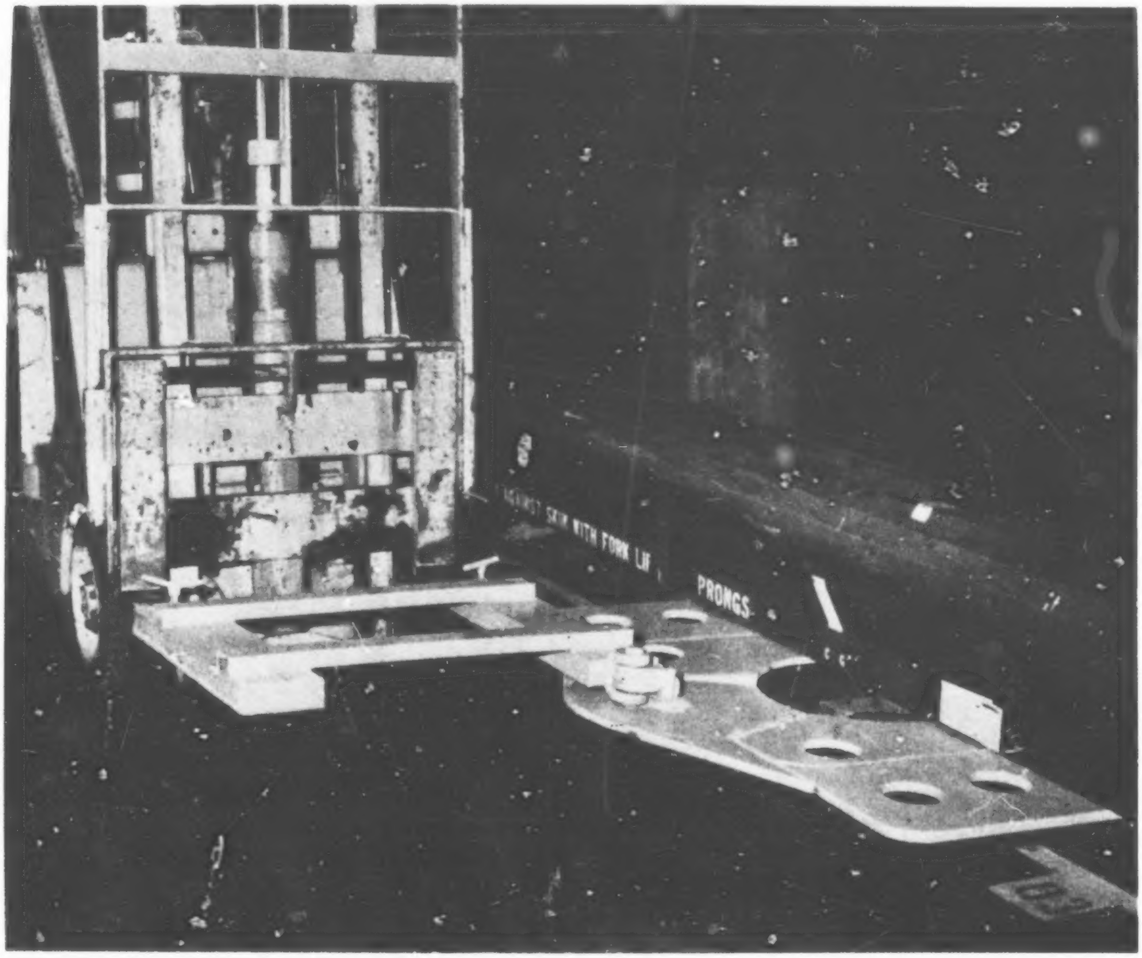


Figure 9. Pivoting carrying platform for handling long items longitudinally.

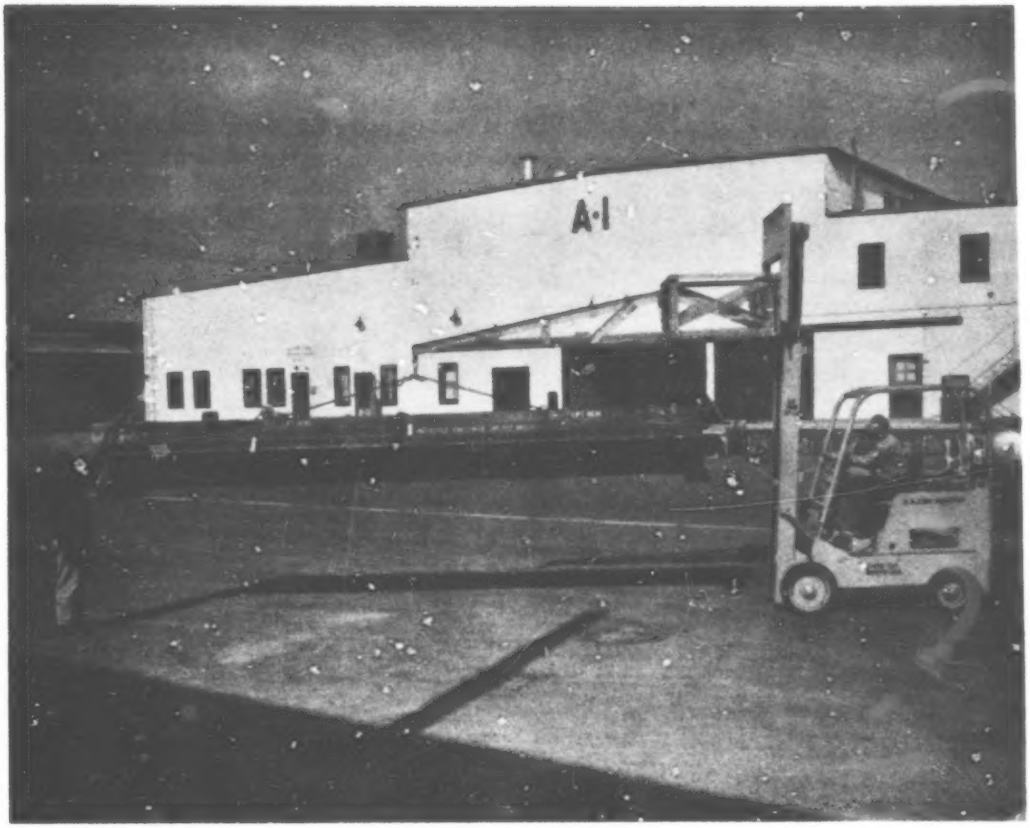


Figure 10. Special developed lift truck boom for handling lightweight long items.

TOPICAL INDEX

A

Subject	Defined Page	Explained Page	Illustrated Page
Aircraft, classification and modification of		511-3	
Air delivery equipment		514-1	
Air shipment, packing for		314-11	
Aisles		25-1	
Ammunition (Class V materiel)		52-1	
Classified ammunition, shipment of		52-6	
CONUS shipments, carloading methods and techniques		52-6	
Facilities, types of		52-2	
Fusible links on magazines		52-2	
Improper shipments, reporting of		52-5	
Inspection of		52-5	
Inventories for		52-4	
Lumber and dunnage used in shipments		52-7	
Marking		52-5	
Materials handling equipment		52-4	
Moisture damage, protection against		52-3	
Motor vehicles and railcars, inspection of		52-5	
Oversea shipments		52-5	
Packing material and dunnage, storage of		52-4	
Palletization or unitization		52-3	
Receiving of		52-5	
Reusable containers, care of		52-4	
Rewarehousing		52-2	
Safety and security		52-1	
Shipment:		52-8	
by motor vehicle		52-5	
outloading		52-4	
Small arms ammunition		52-6	
Small lot disposition		52-2	
Space utilization		52-4	
Special instructions		52-5	
Special permits, DOT		52-5	
Stock location		52-2	
Storage drawings		52-2	
Storage facilities, use of		52-4	
Strapping		52-3	
Termite control		511-1	
Army aircraft and components		511-4	
Aircraft and components, shipment of		511-4	
Movement schedules		511-4	
Processing for shipment		511-5	
Time change components		511-2	
Care and preservation		511-2	
Aircraft engines, reciprocating		511-2	
Aircraft instruments		511-2	
Carburetors, fuel pumps, and injection systems		511-2	
Controlled humidity storage		511-2	
Corrosion control for aircraft		511-2	
Elastic shock absorber and exercise cords		511-2	
Engines, aircraft, gas turbines		511-2	
Fuel tanks		511-2	
Painting and marking of Army aircraft and surveillance drones		511-2	
Classification and modification		511-3	

Subject	Defined Page	Explained Page	Illustrated Page
Helicopter blades:			
disposition of	.....	511-4	
receipts for	.....	511-1	
Storage for	.....	511-1	
Aircraft in storage	511-1		
Extended storage	511-1		
Finite fatigue life accessory	511-1		
Flyable storage	511-1		
Selected condition component	511-1		
Storage factors	511-2		
Temporary storage	511-1		
Time-change accessory	511-2		
Army area communications (AACOMS) shelters	56-3	56-3	56-3 56-4 56-5
Dunnaging of	.....	.....	56-4 56-5 56-6 56-7 56-8 56-9 56-10
Army air delivery equipment, depot storage of	.....	514-1	
Accepted/rejected	514-1		
Air delivery equipment	514-1		
Functional inspection	514-2		
General inspection criteria	.....	514-4	
Historical records	.....	514-5	
Housekeeping	.....	514-7	
Inbound inspection lot	514-1		
Inspection and test criteria	.....	514-7	
Inspection, report of	.....	514-5	
In-storage inspection lot	514-1		
Log record, Army parachute	.....	514-6	
New procurement and/or newly procured	514-1		
Packaging and packing	.....	514-6	
Parachute, troop type	514-2		
Receipts from other installations	.....	514-2	
Receipts, new procurement	.....	514-2	
Rigger, parachute			
Rip cord pin test procedure	.....	.....	514-10
Shipment of	.....	514-4	
Storage methods	.....	514-6	
Technical inspection	514-2		
Army marine items	.....	512-1	
Basic issue list items (BILI) for marine equipment	512-1		
Care and preservation of	512-2	512-2	
Drydocking time limits	512-1	512-1	
Floating equipment, Army marine	512-1		
General information	.....	512-1	
Receipts of	.....	512-1	
Related equipment and supplies	512-2	512-2	
Shipment, preparation for	512-3	512-3	
Storage of	.....	512-1	
Stored vessels, drydocking of	.....	512-1	
B			
Bales, bundles, sacks and rolls	.....	32-8 32-9	
Battery, power	56-2	56-2	
Battery, primary	56-1	56-1	
Battery, secondary	56-1	56-1	
Battery, service	56-1		
Batteries, receipt of	.....	56-2	

Subject	Defined Page	Explained Page	Illustrated Page
Batteries, shipment of		56-2	
Batteries, storage of		56-2	
Blocking and bracing		32-4	
Bulk storage		25-1	
C			
Cable rereeling		25-2	
Care of supplies in storage		38-1	
Accountable Supply Distribution Activity (ASDA) support		38-5	
Ammunition preservation-packaging/packing and repair of		38-16	
Budgeting		38-5	
Condition Code E stocks, issuance of preservation-packaging/packing guidance for		38-6	
Conducting cyclic inspections		38-9	
Cyclic inspection records		38-7	
General supplies, preservation-packaging/packing, minor repair and exercising of		38-10	
General supply, quality control, cyclic inspection		38-6	
Objectives for		38-2	
Policy for		38-2	
Preservation-packaging/packing data, maintenance of		38-5	
Preservation-packaging/packing guidance, processing time standards for		38-6	
Program implementation		38-5	
Priority codes, care of supplies in storage		38-17	
Reporting of		38-5	
Responsibilities for		38-4	
Scheduling cyclic inspections		38-8	
Serviceable assets, issuance of preservation-packaging/packing guidance for		38-6	
Scheduling workload		38-14 38-16	
Workload accomplishment		38-14 38-16	
Workload forecasting		38-7 38-11 38-16	
Cargo transporters (CONEX)	32-10	314-11	
Classified and sensitive materiel		312-1	
Actions required		312-1	
Classified materiel		312-1	
Disposal or destruction of		312-3	
Escorts for		312-2	
Inspections of		312-2	
Inventory		312-3	
Marking and packing of		312-2	
Policy for		312-1	
Receipts of		312-3	
Responsibilities		312-1	
Sensitive materiel	312-3	312-3	
Shipment of		312-2 312-3	
Cleated containers		32-8	
CONEX	32-10		
CONEX, Movement of		32-11	
CONEX transporters and RO/RO trailers, control of		32-13	
Container acceptance criteria/rehabilitation techniques		32-8	
Markings		32-8	
Painting		32-8	
Strapping		32-8	
Control and assignment procedure		47-2	
Assignment board		47-2	
Assignment method		47-3	
Control and utilization		47-2	
Personnel		47-2	
Personnel assigned on a day-to-day basis		47-2	

best copy available

Subject	Defined Page	Explained Page	Illustrated Page
Personnel, assignment of		47-3	
Personnel, regularly assigned		47-2	
Container and dunnage fabrication		48-1	
Forms for		48-2	
Operations factors		48-2	
Policy for		48-1	
Responsibilities for		48-1	
Container selection		32-7	
Control measures, birds		34-2	
Control measures, rodents		34-2	
Conversion of storage space		25-3	
Crates		32-10	
Cross servicing of space		25-3	
D			
Dehumidified storage		25-2	
Demurrage	31-2	31-2	
Discrepancies discovered during issue, rewarehousing and inventory		35-2	
Dispensing and handling equipment		57-3	
Document control	31-3	31-4	
Documentation		32-11	
Drums, use of		57-1	
E			
Empty containers, storage of		57-1	
Covered storage		57-1	
Outside storage		57-2	
Empty transporters, shipment of		32-13	
Equipment and labor		47-1	
Functions of		47-1	
Policy for		47-1	
Responsibilities, using activity		47-2	
Equipment deficiencies		35-2	
Equipment servicing and maintenance		47-3	
Equipment, battery-powered		47-3	
Equipment, gasoline-powered		47-3	
Responsibilities		47-3	
Utilization, reports of		47-4	
Equipment transfer		47-4	
Extreme cold weather storage		313-1	
Arctic lubrication	313-1		
Extreme cold weather regions	313-1		
Policy for	313-1		
Principles for	313-2		
Winterization	313-1		
F			
Fiberboard boxes		32-8 32-9	
Fiberboard drums		32-8	
Fuel tanks, 750-gallon capacity		57-6	
Disposition of petroleum stocks		57-6	
Fumigation, other methods of		34-6	
Fumigation methods and procedures		34-4	
Fumigation safety precautions		34-6	
G			
5-gallon military gasoline containers, standards for storage of		57-1	
Gondola railcar, use of		32-11	
Government furnished property (mutual security program)		32-10	
H			
Handling long, narrow items	515-1	515-1	
Aisle requirements		515-1	515-2

Subject	Defined Page	Explained Page	Illustrated Page
Depot methods, present		515-5	515-6 to 515-9
Item flexing		515-1	
Mobile crane, low profile		515-4	515-4 515-5
Problems in storage		515-1	
Representative items	515-1		
Space consumption		515-2	
Specialized equipment, evaluation of		515-2	
Truck, four directional (4-D) tiering		515-3	
Truck, lift self-side loading, electric, 4,000-pound capacity		515-2	
Handling procedure		57-2	
Hazardous commodities		54-1	
Hazardous general chemicals		54-5	
Protective equipment, items of		54-3	
Storage category groups		54-2	
Hazardous materials		54-1	
Heated space	25-2	25-2	
Helicopter blades, disposition of		511-4	
Housekeeping		25-2 34-2	
I			
Inactivation of space and disposal of		25-3	
Infested stocks, reclamation and disposal of		34-2	
Insect control measures		34-2	
Insect prevention, methods of		34-2	
Inspection and storage, criteria for		57-3	
Collapsible containers for petroleum products		57-5	
Hose, gasoline		57-5	
Pumping assembly, flammable liquid, bulk transfer		57-4	
Pumps, barrel, rotary		57-3	
Pumps, gasoline dispensing		57-4	
Pumps, service station type		57-3	
Care and preservation techniques (collapsible containers)		57-5	
Blister		57-5	
Bloom and mold		57-5	
Cracking		57-5	
Cuts, holes, or abrasions		57-6	
Fumes		57-6	
Incomplete repair kits		57-5	
Interior dry, stiff, or brittle		57-6	
Mold or mildew on ground cloth		57-5	
Rents or tears in ground cloth			
Rust and corrosion		57-5	
Separations		57-5	
Sludge in containers		57-6	
Tie ropes		57-6	
Inspection equipment		57-7	
Packaged petroleum		57-2	
Petroleum containers		57-2	
Inspection procedure (packaged petroleum)		57-3	
Condition code A		57-3	
Condition code B		57-3	
Condition code F		57-3	
Condition code H		57-3	
Interpretation and clarification for shipment of MAP materiel		32-10	
Inventory		37-1	
Category codes			A-1
Location audit reconciliation		37-5	
Organization		37-1	
Planning		37-1	

Subject	Defined Page	Explained Page	Illustrated Page
Procedures	.....	37-2	
Accuracy levels	.....	37-4	
Counting	.....	37-3	
Depot inventory capability	.....	37-2	
Inventory requirements	.....	37-2	
Inventory scheduling	.....	37-2	
Preparation of materiel for inventory	.....	37-3	
Unscheduled inventories	.....	37-3	
Reconciliation	.....	37-1	
Reporting	.....	37-6	
Summarized balance	.....	37-1	
Training	.....	37-1	
J			
K			
L			
Layout, standardization of	.....	25-1	
Listing method survey, action subsequent to	.....	33-4	
Listing method survey, conduct of	.....	33-4	
Loading	.....	32-11	32-12
Loading and offloading procedures	.....	32-4	
Loading procedures	32-3	32-3	32-5 32-6 32-12
Blocking and bracing	.....	32-4	
Other considerations			
Load selection criteria	32-11	32-11	
Location survey	33-1	33-2	
Location survey, frequency of	.....	33-2	
Location survey-listing method, action prior to	.....	33-4	
Location survey-punched card method, action prior to	.....	33-2	
Locator file	.....	33-1	
Locator file sequence	.....	33-2	
Loose issue replenishment	.....	39-1	
Processing the replenishment action in bulk areas	.....	39-3	
Replenishment action	.....	39-2	
Replenishment action, completion of the	.....	39-3	
Replenishment criteria	.....	39-1	
Replenishment form processing	.....	39-1	
Lot storage, small and medium (bulk)	.....	25-1	
Low flashpoint, light and heavy products	.....	57-6	
M			
MAP materiel, notice of availability of	.....	32-10	
Marking	.....	57-7 314-11	
Marking of materials for storage	.....	25-2	
Metal drums and cans	.....	32-8	
Metal drums-reusable containers	.....	32-9	
Miscellaneous commodities	.....	56-1	
Batteries, receipt of	.....	56-2	
Batteries, shipment of	.....	56-2	
Batteries, storage of	.....	56-2	
Battery, power	56-2	56-2	
Battery, primary	56-1	56-1	
Battery, secondary	56-1	56-1	
Battery, service	56-2		
Bills of lading	.....	56-2	
Communications system shelters, Army area	.....	56-3	56-3 to 56-10
Packaging for storage and shipment	.....	56-2	

Subject	Defined Page	Explained Page	Illustrated Page
Receipt of	.....	56-2	
Shipment of	.....	56-2	
Storage of	.....	56-2	
Mutual agreements	.....	314-12	
Mutual security program shipments (MAP)	.....	32-6	

N

Subject	Defined Page	Explained Page	Illustrated Page
New procurement receipts	.....	514-2	
General inspection criteria	.....	514-4	
Historical records	.....	514-4	
Housekeeping	.....	514-7	
Inspection and test criteria	.....	514-7	514-10
Inspection, report of	.....	514-5	
In-storage inspection	.....	514-3	
Packaging and packing	.....	514-6	
Receipts from other installations	.....	514-2	
Shipment of	.....	514-4	
Storage methods	.....	514-6	
Non-Department of Defense-owned stocks	.....	510-1	
Damage to S and C material	.....	510-2	
Policy for	.....	510-1	
Records and reports	.....	510-2	
Responsibilities of	.....	510-1	
Rewarehousing of	.....	510-1	
Security of	510-1		
Special projects	510-1		
Strategic and critical (S and C) material	510-1	510-1	
Storage procedures, strategic and critical material	.....	510-2	

O

Subject	Defined Page	Explained Page	Illustrated Page
Office of Civil Defense (OCD) material	.....	510-2	
Inspection, surveillance and disposition	.....	510-3	
Responsibilities of	.....	510-2	
Storage procedures, OCD material	.....	510-3	
Open storage	.....	25-2	
Operations in controlled humidity space	.....	310-1	
Equipment and operations factors	.....	310-5	310-6
Facility selection, criteria for	.....	310-1	
Policy for	.....	310-1	
Responsibilities	.....	310-3	
Supplies, selection of	.....	310-3	
Utilization factors	.....	310-4	
Other non-warehouse space	25-2		
Overnight parking, materials handling equipment	47-4	47-4	

P

Subject	Defined Page	Explained Page	Illustrated Page
Packaged lubricants and greases, standards for storage of	.....	57-1	
Packaged petroleum products (including containers and dispensing equipment)	.....	57-1	
Dispensing and handling equipment	.....	57-3	
Blister	.....	57-5	
Bloom and mold	.....	57-5	
Collapsible containers for petroleum products	.....	57-5	
Cracking	.....	57-5	
Cuts, holes, or abrasions	.....	57-6	
Disposition of stocks	.....	57-6	
Fuel tanks, 750-gallon capacity	.....	57-6	
Fumes	.....	57-6	
Hose, gasoline	.....	57-5	
Incomplete repair kits	.....	57-5	
Inspection and storage criteria	.....	57-3	
Interior dry, stiff, or brittle	.....	57-6	
Mold or mildew on ground cloth	.....	57-5	
Pumping assembly, flammable liquid, bulk transfer	.....	57-4	

Subject	Defined Page	Explained Page	Illustrated Page
Pumps, barrel, rotary		57–3	
Pumps, gasoline dispensing		57–4	
Pumps, service station type		57–3	
Rents or tears in ground cloth		57–6	
Rust and corrosion		57–5	
Separations		57–5	
Sludge in containers		57–6	
Tie ropes		57–6	
Drums, 55-gallon, general information		57–6	
Drums, use of		57–1	
Empty containers, storage of		57–1	
Covered storage		57–1	
Outside storage		57–2	
55-gallon drummed petroleum products, standards for storage of		57–1	
5-gallon military gasoline containers (Blitz), standards for storage of		57–1	
Handling procedure		57–2	
Inspection		57–2	
Condition code A		57–3	
Condition code B		57–3	
Condition code F		57–3	
Condition code H		57–3	
Inspection procedure		57–3	
Packaged petroleum		57–2	
Petroleum containers		57–2	
Inspection equipment		57–7	
Light and heavy products, low flashpoint		57–6	
Location of		57–1	
Marking		57–7	
Packaged lubricants and greases, standards for storage of		57–1	
Quality surveillance		57–2	
Reports		57–6	
Safety measures		57–3	
Packaging general supplies	314–1	314–1	
Packaging, methods of		314–3	
Preservation, methods of		314–3	
Protection, levels of		314–2	
Specifications and standards, Department of Defense, index of		314–2	
Specifications, standards, and instructions		314–1	
Packaging materials	314–2	314–2	
Packing		314–5	
Container markings		314–9	
Exterior containers, federal specifications		314–7	
Exterior containers for parcel post		314–9	
Exterior containers, general requirements for		314–5	
Exterior containers, selection and use of		314–7	
Exterior containers, strapping (reinforcing) of		314–9	
Federal specifications		314–7	
Fiberboard boxes, use of		314–8	
Military specifications		314–8	
Nailed boxes, use of		314–8	
Palletized unit loads		314–10	
Pallet pattern outline table		46A–7	
Parachute, troop type	514–2		
Personnel, assignment of	47–3		
Personnel, training and licensing of		47–3	
Pest control		34–1	
Cleaning and disinfestation by contract		34–2	
Fumigation methods and procedures		34–4	
Fumigation, other methods of		35–6	
Fumigation safety precautions		35–6	
Prevention, methods of		34–2	
Responsibilities		34–1	
Specific item considerations		34–3	

Subject	Defined Page	Explained Page	Illustrated Page
Surveillance inspection		34-1	
Training and safety		34-2	
Petroleum products, reports of inspection of		57-6	
Planographs		26-1	
Plywood drums		32-8	
Preservation, method of		314-3	
Propellant explosives, marking of		52-11	
Protection, levels of		314-2	
Publications for packaging Army general supplies		314-1	
Punched card method survey, action subsequent to		33-3	
Punched card method survey, conduct of		33-3	
Q			
Quality surveillance		57-2	
R			
Railway equipment and components		513-1	
Care in storage		513-2	
Cooling water in diesel engines, treatment of		513-3	
General		513-1	513-1
Inspection by the storage activity		513-2	
Journals, preservation of		513-3	
Painting of		513-2	
Preshipment testing		513-3	
Shipment of		513-4	
Receiving		31-1	
Car control		31-2	
Checking incoming materiel		31-4	
Coordination		31-3	
Demurrage	31-2	31-3	
Document control	31-3	31-4	
Planning the operation		31-1	
Reporting of		31-12	
Unloading materiel from railroad cars	31-6	31-6	31-7 31-8 31-10 31-12
Unloading materiel from trucks		31-12	
Unloading procedure	31-5	31-5	
Receiving 55-gallon drummed petroleum products		57-1	
Records and files in the warehouse		25-2	
Remarking superseded stock numbers		314-12	
Retail storage		25-1	
Retrograde materiel, depot handling		316-7	
Inspection and documentation		316-9	
Planning		316-7	
Receipt and storage		316-10	316-12 316-13 316-14
Regulatory guidance		316-7	
Segregation and identification		316-14	
Special considerations		316-8	
Retrograde materiel, handling of	316-1	316-1	
Retrograde movement, preparation of materiel for		316-1	
Containers, proper use of		316-7	
Preparation, minimum acceptable		316-7	
Protection, requirements for		316-1	
Regulatory guidance		316-1	316-4 316-5 316-6
Rigger, parachute	514-1		
Roll on/roll off (RO/RO)	32-10		

Subject	Defined Page	Explained Page	Illustrated Page
Roll on/roll off (RO/RO) shipments		314-11	
Roll on/roll off trailer or wheeled vehicle	32-10		
S			
Safety measures		57-3	
Seavan	32-10		
Shipment of supplies by CONEX, Roll on/roll off (RO/RO), trailers, and seavan		32-10	
Shipments during inspection		38-4	
Shipping		32-1	
Documentation		32-1	
Shipping 55-gallon drummed petroleum products		57-1	
Shipping sacks, textile and multiwall paper		32-8	
Small and medium (bulk) lot storage		25-1	
Space allocation map		26-1	
Space, assignment of		25-3	
Space audit and report procedure		26-1	
Space control and reporting		26-1	
Space control techniques		26-1	
Space reporting, illustrated		26-1	
Space utilization		25-2	
Special commodities, storage of		57-1	
Specialized equipment, evaluation of		515-2	
Mobile crane, low profile		515-3	515-4 515-5
Present depot methods		515-5	515-9 to 515-9
Truck, lift, self-side loading, electric, 4,000 pound capacity		515-2	515-2
Truck, tiering, four-directional		34-3	
Specific item considerations		314-2	
Specifications, standards, Department of		35-1	
Defense index of		35-1	
Stock discrepancies		35-2	
Discrepancies discovered at time of receipt	33-1		
Discrepancies discovered during issue, rewarehousing and inventory		33-2	
Stock locator file		25-2	
Stock locator file, maintenance of		25-2	
Stock, protection of		25-1	
Storage and materials handling operations, evaluation of		57-1	
Storage, bulk		57-1	
Storage of 55-gallon drummed petroleum products, standards for		25-2	
Storage of 5-gallon military gasoline containers (Blitz), standards for		25-1	
Storage operations, aids to		25-1	
Storage practices		25-2	
Storage, retail		25-1	
Storage space, allocation of		25-1	
Storage space, effective utilization of Aisles		26-1	26-3
Storage space, survey of		25-2	
Storage space, types of	25-2		
Blacktop	25-2		
Concrete	25-2		
Crushed stone	25-2		
Gravel		47-3	
T			
Training and licensing of personnel	25-2		
U			
Unheated space	46-1	32-4	
Unit loads		46-1	
Policy for		46-1	
Unitizing methods		46-1	46-A1 to 46-A7

Subject	Defined Page	Explained Page	Illustrated Page
W			
Wirebound boxes		32-8, 32-9	
Wirebound boxes, use of		314-8	
Wooden barrels		32-8, 32-9	
Wooden containers		32-8, 32-9	
Working areas		25-1	
Worksheet, storage space survey		26-3	

[AG 400.24 (28 Jun 57)]

By Order of *Wilber M. Brucker*, **Secretary of the Army**:

MAXWELL D. TAYLOR,
General, United States Army,
Chief of Staff.

Official:
HERBERT M. JONES,
Major General United States Army,
The Adjutant General.

Distribution:

Active Army:

- OSD
- DCSPER
- ACSI
- DCSOPS
- DCSLOG
- ACSRC
- CAMG
- CoA
- CUSARROTC
- CofF
- CINFO
- TIG
- TJAG
- CLL
- CMH
- CNGB
- OCSpWar
- Technical Stf, DA
- USCONARC
- US ARADCOM
- OS Maj Comd
- MDW
- ZI Armies
- Instl

NG: State AG.

USAR: None.

For explanation of abbreviations used, see AR 320-50.

Charts Transposed to

End of Volume.

APPENDIX 46-1

Pallet Pattern Selection Table

Selection of pallet pattern outlines will be as follows:

INCHES IN LENGTH

INCHES IN WIDTH

	6	6½	7	7½	8	8½	9	9½	10	10½	11	11½	12	12½	13	13½	14	14½	15	15½	16	16½	17	17½	18	18½	19	19½	20	20½	21	21½
6	122	122	118	115	115	115	71	71	111	120		65	65	60	106	106	46	45	45	62	100	100	100	78	78	78	78	78	76	76	76	76
6½		121	121	67	67	67	24	61	61	120	65	65	38	63	63	75	75	62	62	58	58	58	58	47	47	19	19	119	42	42	42	42
7			117	66	59	114	24	110	110	116	49	49	49	105	75	75	75	75	39	99	99	99	99	19	19	19	19	42	42	42	42	42
7½					113	113	64	64	64	74	25	25	57	57	57	73	73	73			27	27	27	77	77	77	72	72	72	72	72	72
8					113	113	64	64	23	74	25	25	22	22	22	44	44		27	27	27	27	27	77	77	72	72	72	72	30	30	30
8½						113	74	74	109	112	25	25	22	22	22	44	44	27	27	27	27	27	98	72	72	30	30	30	30	30	30	30
9									108	108	48	21	21	21	20	18	18	15	15	15	15	14	97						26	26	26	
9½									108	108	48	21	20	20	20	18	18	14	14	14	14	14	97				26	26	26	26	26	26
10										108	21	21	20	20	17	17	17	14	14	14	14	14	97			26	26	26	26	26	26	36
10½											104	104	104	104	104	17	16	29	29	12	12	97	97	26	26	26	26	26	26	26		82
11																	28	28	28	11	11	9	9	26	26	26	26	8	8	8	102	102
11½															28	28	28	28	11	11	9	9	9	26	8	8	8	8	8	102	102	102
12															28	28	28	13	11	11	9	9	9	8	8	8	8	7	7	102	102	102
12½															28	28	13	11	11	9	9	9	9	8	7	7	7	7	102	102	102	102
13															13	103	103	11	11	9	9	9	9	7	7	7	7	7	102	102	102	102
13½																			37	37	37	96	96	7	7	7	7	5	5	5	5	5
14																		37	37	91	91	91	91	7	7	7	7	5	5	5	5	5
14½																															4	4
15																													4	4		
15½																													4	4	4	95
16																													4	95	95	95
16½																									4	4	4	95	95	95	95	95
17																									4	95	95	95	95	95	95	95
17½																																
18																																
18½																																
19																																
19½																																
20																																
20½																																
21																																6
21½																																
22																																
22½																																
23																																
23½																																
24																																
24½																																
25																																
25½																																
26																																
26½ THRU 34																																
34½																																
35																																
35½																																
36																																
36½																																
37																																
37½																																
38																																
38½																																
39																																
39½																																
40																																
40½																																
41																																
41½																																
42																																
42½																																
43																																

USE OF TABLE

1. Determine width and length of container to nearest ½ inch.

2. Locate the length of container at the top, and width at left side of index chart, the container pattern number will be found at the intersection of two columns.

3. Tie load by reversing pattern for each tier.

4. Height may be substituted for width when the containers are of sufficient strength to withstand superimposed loads, and where such placement will cause no adverse effect in the shipment or storage of the materiel.

APPENDIX 46-1 (Continued)

INCHES IN LENGTH

INCHES IN WIDTH

	22	22½	23	23½	24	24½	25	25½	26	26½	27	27½	28	28½	29	29½	30	30½	31	31½	32	32½	33	33½	34	34½	35	35½	36	36½	37	37½
6	43	43	56	56	56	56	34	34	34	81	81	81				10	10	10	70	70	70	70	70	70	70	55	55	55	55	55	55	124
6½	56	56	56	56	34	34	34	34	34			10	10	10	10	10	10		80	80	80	80	55	55	55	55	55	55	55	55	69	69
7	41	41	33	33	33	93	93	93	93	10	10	10	10	10	10	80	80	80	80		54	54	54	54	54	54	54	54	54	69	69	69
7½	40				10	10	10	10	10	10	10	10	10												68	68	68	68	68	68	68	50
8	40	10	10	10	10	10	10	10	10	10	10														68	68	68	68	68	50	50	50
8½	10	10	10	10	10	10	10	10	10								68	68	68	68	68	68	68	68	68	68	50	50	50	50	50	50
9		36	36	36	36	36	36	92	92														35	35	53							
9½	36	36	36	36	92	92	92	92	92											35	35	35	35	53								
10	36	36	36	92	92	92	92	92	92								35	35	35	35	35	53	53						31	31	31	31
10½	92	92	92	92	92	92	92	92	92					35	35	35	35	35	35						31	31	31	31	31	31	31	31
11											35	35	35	35	35	35	35															
11½									35	35	35	35	35	35	35					79												
12								35	35	35	35	35	35				79	79	79													2
12½					- 35	35	35	35	35	35	35			79	79	79	79	79											2	2	2	2
13			35	35	35	35	35	35	35			79	79	79	79	79	79									2	2	2	2	2	2	2
13½	32	32	32	32	32	32	32	91	91														2	2	2	2	2	2	2	2	2	2
14	32	32	32	32	32	91	91	91	91												2	2	2	2	2	2	2	2	2	2	2	2
14½							3	3	3																							
15					3	3	3	3	3																							
15½			3	3	3	3	3	3	3																							
16		3	3	3	3	3	3	3	3																							94
16½	3	3	3	3	3	3	3	3	3																				94	94	94	94
17	3	3	3	3	3	3	3	3																			94	94	94	94	94	94
17½								90	90																1							
18							6	90	90															1	1							
18½						6	90	90	90													1	1	1								
19				6	6	90	90	90	90											1	1	1	1									
19½			6	90	90	90	90	90	90									1	1	1	1	1										
20		6	6	90	90	90	90	90	90								1	1	1	1	1											
20½	6	6	90	90	90	90	90	90	90						1	1	1	1	1	1												
21	6	90	90	90	90	90	90	90	90					1	1	1	1	1	1													
21½													1	1	1	1	1	1														
22																																
22½																																
23																																
23½																																
24																																89
24½																														89	89	89
25																													89	89	89	89
25½																											89	89	89	89	89	89
26																										89	89	89	89	89	89	89
26½ THRU 34																																
34½																																
35																																
35½																																
36																																
36½																																
37																																
37½																																
38																																
38½																																
39																																
39½																																
40																																
40½																																
41																																
41½																																
42																																
42½																																
43																																

(Sheet 2 of 3 sheets)

APPENDIX 46-1 (Continued)

INCHES IN LENGTH

INCHES IN WIDTH

	38	38½	39	39½	40	40½	41	41½	42	42½	43	43½	44	44½	45	45½	46	46½	47	47½	48	48½	49	49½	50	50½	51	51½	52
6	124	124	124	124	124	52	52	52	52	52	52	123	123	123	123	123	123	123	123	123	123	123	123	123	123	123	123	123	123
6½	69	69	69	51	51	51	51	51	51	51	51						88	88	88	88	88	88	88	88	88	88	88	88	88
7	69	51	51	51	51	51	51	51	51	51	51	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88
7½	50	50	50	50	50	50	50	50	50	50	50										87	87	87	87	87	87	87	87	87
8	50	50	50	50	50	50	50	50	50	50	50				87	87	87	87	87	87	87	87	87	87	87	87	87	87	87
8½	50	50	50	50	50	50	50	50	50	50	50	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87
9					31	31	31	31	31	31	31														86	86	86	86	86
9½	31	31	31	31	31	31	31	31	31	31	107									86	86	86	86	86	86	86	86	86	86
10	31	31	31	31	31	31	31	31	31	107	107				86	86	86	86	86	86	86	86	86	86	86	86	86	86	86
10½	31	31	31	31	31	31	31	31			86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86
11							2	101	101	101	101																		
11½			2	2	2	2	101	101	101	101	101																		85
12	2	2	2	2	2	101	101	101	101	101	101														85	85	85	85	85
12½	2	2	2	2	101	101	101	101	101	101	101										85	85	85	85	85	85	85	85	85
13	2	2	101	101	101	101	101	101	101	101	101						85	85	85	85	85	85	85	85	85	85	85	85	85
13½	2												85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85
14	2										94	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85
14½							94	94	94	94	94																		
15					94	94	94	94	94	94	94																		
15½		94	94	94	94	94	94	94	94	94	94																		
16	94	94	94	94	94	94	94	94	94	94	94																		
16½	94	94	94	94	94	94	94	94	94	94	94																		
17	94	94	94	94	94	94	94	94	94	94	94																		
17½																											84	84	84
18																									84	84	84	84	84
18½																						84	84	84	84	84	84	84	84
19																				84	84	84	84	84	84	84	84	84	84
19½																	84	84	84	84	84	84	84	84	84	84	84	84	84
20															84	84	84	84	84	84	84	84	84	84	84	84	84	84	84
20½													84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84
21											84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84
21½									89	89	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84
22							89	89	89	89	89																		
22½					89	89	89	89	89	89	89																		
23			89	89	89	89	89	89	89	89	89																		
23½	89	89	89	89	89	89	89	89	89	89	89																		
24	89	89	89	89	89	89	89	89	89	89	89																		
24½	89	89	89	89	89	89	89	89	89	89	89																		
25	89	89	89	89	89	89	89	89	89	89	89																		
25½	89	89	89	89	89	89	89	89	89	89	89																		
26	89	89	89	89	89	89	89	89	89	89	89																		
26½ THRU 34																													
34½																													83
35																											83	83	83
35½																										83	83	83	83
36																									83	83	83	83	83
36½																								83	83	83	83	83	83
37																						83	83	83	83	83	83	83	83
37½																					83	83	83	83	83	83	83	83	83
38																			83	83	83	83	83	83	83	83	83	83	83
38½																		83	83	83	83	83	83	83	83	83	83	83	83
39																	83	83	83	83	83	83	83	83	83	83	83	83	83
39½																83	83	83	83	83	83	83	83	83	83	83	83	83	83
40															83	83	83	83	83	83	83	83	83	83	83	83	83	83	83
40½													83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83
41												83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83
41½											83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83
42										83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83
42½									83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83
43									83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83

(Sheet 3 of 3 sheets)

☆U.S. GOVERNMENT PRINTING OFFICE: 1990 261-872/20484